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Compiled by Roger Roffey and Marianne Olofsson

Swedish EAPC Seminar on Non-proliferation of WMD

- New approaches needed for protection

of forces and civilians

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Swedish EAPC Seminar on Non-proliferation of WMD - New approaches needed for protection of forces and civilians

Abstract (not more than 200 words)

A seminar was held in Stockholm on the 18-19th of September 2003 on Non-proliferation of Weapons of Mass Destruction – New approaches for protection of forces and civilians. The seminar was organised on behalf of the Ministry for Foreign Affairs and the Ministry of Defence. To the seminar representatives from NATO and EAPC (Euro Atlantic Partnership Council) were invited. One aim was to present developments in the CBRN area and explore possibilities for enhanced cooperation between EAPC countries and NATO countries in the area of CBRN-protection. The program covered a wide area from describing the wider threat perception in the CBRN area to export control measures, information surveillance systems, developments concerning rapid response forces/teams, research and development on analytical methods, medical and physical protection. The seminar examined a number of key challenges in the CBRN area. Further defence related to CBRN risks and threats as well as practical means to improve international cooperation to combat the overall problems of proliferation were discussed. Some ideas for the future were:

- progressive involvement by Partners in Alliance CBRN defence initiatives,
- increased information exchange and potential Partner participation in the Alliance' CBRN Battalion,
- continued EAPC expert-level cooperation within working groups,
- more frequent EAPC disarmament expert meetings,
- preparation of a major EAPC bio simulation exercise.

Keywords

WMD, EAPC, NATO, export control, chemical support team, information surveillance system, non-proliferation

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EAPC seminarium om icke-spridning av massförstörelsevapen - nya möjligheter för skydd av trupp och civila

Sammanfattning (högst 200 ord)

Ett seminarium hölls i Stockholm den 18-19 september 2003 på temat Ickespridning av massförstörelsevapen – Nya möjligheter för skydd av trupp och civila. Seminariet organiserades på uppdrag av UD och Fö. Till seminariet hade representanter för NATO och EAPR (Euro Atlantiska Partnerskaps Rådet) inbjudits. En målsättning var att presentera utvecklingen inom NBC-området och undersöka möjligheterna för utökat samarbete mellan NATO och EAPR-stater när det gäller NBC-skydd. Programmet spände över ett brett område från beskrivning av den breddade hotbilden till exportkontrollmetoder, informationssystem för övervakning, utveckling av snabbinsatsstyrkor NBC samt utveckling rörande analysmetoder, medicinskt och fysiskt skydd. Seminariet undersökte ett antal vitala utmaningar inom NBC-området. Därtill diskuterades hot och risker samt praktiska metoder för att förbättra det internationella samarbetet för att bekämpa spridningen av massförstörelsevapen. Idéer för det framtiden var:

- ökad medverkan från Partners i Alliansens NBC-skyddsinitiativ,
- ökat informationsutbyte och ett eventuellt Partner deltagande i CBRN Batallion,
- fortsatt samarbete på EAPR expertnivå inom arbetsgrupper,
- mer frekventa möten för nedrustningsexperter,
- förbereda en större biologisk simuleringsövning.

Nyckelord

NBC, EAPR, NATO, massförstörelsevapen, exportkontroll, keminsatsstyrka, informationsövervakningssystem

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1. Aim

The proliferation of Weapons of Mass Destruction has become a global problem. Enhanced international cooperation is needed to combat and solve the problem. In this context NATO and the Euro Atlantic Partnership Council (EAPC) play an important role. A framework for this is the Partnership Action Plan Against Terrorism.

On 18-19 September 2003, the Swedish Defence Research Agency (FOI) on behalf of the Ministry of Defence and the Ministry for Foreign Affairs, organized an EAPC seminar on new approaches needed for protection of forces and civilians. The seminar focused on exchange of experiences of NBC-protection and the risk of NBC-terrorist attacks during peace support operations.

The aim of the EAPC seminar was to increase political awareness of the problem, to strengthen the network of experts and reinforce the cooperation between NATO, partners and international organizations in this particular area. These goals coincide with the general trend to strengthen the response to weapons of mass destruction.

The agenda of the seminar included the most important elements of a country's NBC defence system for peace support operations and activities on non-proliferation.

2. Scope

International peace support operations may have to deal with chemical, biological and radiological agents present in the environment or intentionally spread by an adversary. At present, these agents have most commonly been released unintentionally. However, events in the past years have clearly shown that the risk of terrorists using NBC agents cannot be ignored.

The organisation committee for the seminar was lead by Roger Roffey and consisted of Marianne Olofsson (administration, planning and logistics), Torbjörn Nylén, Björn Sandström and Sven-Åke Persson all FOI NBC Defence. The seminar was supported by the Ministry of Defence and financially by the Ministry for Foreign Affairs.

The seminar was presented for all NATO/EAPC partners at the 2nd DGP Defence Group on Proliferation's meeting in Brussels in an EAPC format on May the 13th 2003. At that the partners were invited to participate and come to Stockholm in September.

Increased attention is being given in NATO to the risks resulting to NATO and its forces abroad from WMD. "Some states, including on NATO's periphery and in other regions, sell or acquire NBC weapons and delivery means. ... Non-state actors have shown the potential to create and use some of these weapons." Thus "the Alliance's defence posture against the risks and potential threats of the proliferation of NBC weapons and their means of delivery must continue to be improved." Since NATO forces might operate out of area "capabilities for dealing with proliferation risks must be flexible, mobile, rapidly deployable and sustainable." (reference NATO assigns counterproliferation tasks to military force, Basic-Bits Press Release 24 April 1999).

3. Program

Thursday 18 September

Afternoon session: Chairman Åke Sellström

1200-1400 hrs - Registration, refreshments

1400 hrs - Opening address
Dr Åke Sellström, Head of FOI NBC Defence

1430 hrs - How can EAPC contribute to the goals of the NATO Prague summit?
Mr Ted Whiteside, Head, Centre for Weapons of Mass Destruction, NATO HQ

1500 hrs - Coffee break

1530 hrs - Export controls - Their role and how they function
Mr Richard Ekwall, Deputy Head, Department of Strategic Export Controls, Swedish Ministry for Foreign Affairs

1600 hrs - Antiproliferation (CBW)
Dr Anthony Phillips, former Technical Manager Non-Proliferation, Dstl Chemical and Biological Sciences, Porton Down, UK

1630 hrs End of program

1730 hrs - Sightseeing tour with m/s Delfin IV with refreshments and snacks

1900 hrs - Dinner at the National Museum of Fine Art

Friday 19 September

Morning session: Chairman Dr Torbjörn Nylén

0930 hrs - **Low Level Threats**
Dr Björn Sandström FOI NBC-Defence

1000 hrs - Environmental and health risks for deployed personnel in international operations.
Birgitta Liljedahl, Senior Researcher, FOI NBC Defence

1030 hrs - Coffee break

1100 hrs - Surveillance and Field epidemiological team
Dr Anders Tegnell SMI, Swedish Institute for Infectious Disease Control

1130 hrs - Barents Rescue 2001
Dr Robert Finck, SSI, Swedish Radiation Protection Authority

1200 hrs - Legal aspects on international peacekeeping operations
Mr Stefan Ryding-Berg, Chief Legal Adviser of the Swedish Armed Forces

1230 – 1400 Lunch

Afternoon session: Chairman Dr Sven-Åke Persson

1400 hrs - The Rapid Response Forces for NBC-protection

Ways to create a multinational rapid NBC-response force
Mr Kjell Larsson SRV, Swedish Rescue Services Agency

Multinational Co-operation in NATO's Chemical, Biological, Radiological and Nuclear (CBRN) Defence: the unique NATO Multinational CBRN Defence Batallion
Lt.Col. C Wolterbeek, NATO WMD Center

1500 hrs - Coffee break

1530 hrs - Sampling and Analysis
Dr Henri Garrigue, NATO WMD Center

Medical Protection
Dr Les Nagata, Defence R&D Suffield, Canada

Physical Protection
Dr Ola Claesson, FOI NBC Defence

1630 – 1645 Concluding remarks - Dr Åke Sellström

4. Introduction by Ambassador Anders Bjurner, Swedish Ministry for Foreign Affairs

Ambassador Anders Bjurner is Deputy Director General and Head of the Department for European Security Policy at the Swedish Ministry for Foreign Affairs in Stockholm.

It is a pleasure for me to welcome you to this EAPC seminar on "Non-Proliferation of Weapons of Mass Destruction – New Approaches Needed for Protection of Forces and Civilians".

The idea to hold this seminar came up in the aftermath of the tragic events of September 11, 2001. Sweden, together with Finland, presented a set of proposals to the EAPC on how to draw on the partnership in the international efforts to deal with terrorism and weapons of mass destruction. Many other EAPC countries – and the NATO Secretariat itself - have since made significant contributions to ensure that the Prague Summit of last year laid a solid foundation on which to enhance the partnership in this area. And now is the time to translate the Prague conclusions into concrete activity. This is why it is so important to have your expertise gathered here today.

But we also need to remind ourselves of work being undertaken in other fora. In the end, we will only be able to protect of our populations and forces from weapons of mass destruction through joint and multiple efforts, internationally as well as regionally.

The need for this is greater than ever. Never before have so many countries had access to weapons of mass destruction or the ambition to develop them. And never before have individuals been able to pose threats to entire societies. Weapons of mass destruction in the hands of terrorists is our worst nightmare. The scientific and technological development in the chemical and biotech industry is rapid. Today, it is fairly easy and inexpensive to construct weapons of mass destruction. The threat is global and could affect us all.

In March this year, the (late) Swedish Minister for Foreign Affairs initiated a discussion within the European Union on how to develop the Union´s common policy regarding non-proliferation of weapons of mass destruction. It resulted in a strengthening of the Union´s policy, and the EU is now in a better position to become more actively engaged in non-proliferation and disarmament of weapons of mass destruction. I believe it will enable the EU to take a more proactive approach in international fora where these issues are being dealt with.

My own government has also initiated an independent commission on disarmament and non-proliferation of weapons of mass destruction. It will be chaired by Dr. Hans Blix, former head of UNMOVIC. The purpose of the commission is to give new impulses to the international efforts against weapons of mass destruction and new impulses to the international debate. Over the next two year´s it will develop a set of recommendations on what the international community can do to improve its preparedness.

By its special focus on practical political-military issues, the EAPC provides a unique forum for translating policy recommendations into concrete activity. *The Partnership Action Plan Against Terrorism* (PAP-T), adopted at the Prague Summit, provides the tool. Since the action plan was adopted, work within this area has been intensified and this seminar is one of the results of those efforts.

Co-operation among the EAPC countries in the field of Civil Emergency Planning has progressed immensely over the last year. A *Civil Emergency Action Plan* has been adopted to improve preparedness against attacks on the civilian population by NBC agents. Work is also being undertaken to develop an inventory of NBC resources for international use and to establish minimum guidelines on how to protect the civilian population. This is important. Because national NBC resources and expertise are scarce, the support by other EAPC countries could be crucial when an NBC attack on the civilian population occurs.

We should also not forget that an NBC attack could easily have transboundary effects. Hence, we need improve our capacity to work together in emergency situations across borders and with several nations involved. Against this background, we look forward to the upcoming EAPC exercise *DACIA* in Romania next month.

On the military side, EAPC countries have a substantial experience of working together in peace support operations. A key element here is force protection. We should now build on these experiences to consider how to further enhance protection of our forces against NBC attacks. Training, education, and exercises are just a few examples. Hopefully, these two days could result in ideas on how EAPC co-operation could be deepened in this field.

NATO´s WMD Centre is playing a crucial role in co-ordinating and catalyzing activity in the field that we will be dealing with at this seminar. I would like to thank its director Mr. Ted Whiteside for all the support he has given us in planning the seminar and we are very happy that you could find the time to be here in Stockholm. You are warmly welcome. We hope this seminar will inspire more of the good co-operation we have had with the WMD Centre.

I hope this seminar will give new and concrete impulses to improve NBC protection for our civilians and our forces. This is a key element in the overall effort to to counter and handle the threat of terrorism and weapons of mass destruction. I am convinced that the expertise gathered here today will make a significant contribution to this endeavour.

5. Opening address by Åke Sellström

The Head of the Swedish Defence Research Agency, Division for NBC Defence gave an introductory lecture on the aims of the seminar and the importance of cooperation in NBC defence.

The Swedish Government has a longstanding commitment and interest in limiting the spread and use of weapons of mass destruction (WMD). A dedicated portion, approximately 200 persons, at the Swedish Defence Research Agency (FOI) is involved in various research tasks with direct or indirect bearing on this ambition. It is only, therefore, logical that FOI, on behalf o the Ministry for Foreign Affairs and the Ministry of Defence is arranging this EAPC seminar.

The first day of the program deals with political and technical issues of arms control and of risks with international operations. The last day deals mainly with issues of protection. Swedish and international activity relevant to all these issues will be presented. Catalyzing a discussion on such relevant issues, it is the hope that FOI may contribute to the benefit of the international community, with knowledge, collaboration or support.

6. How can EAPC contribute to the goals of the NATO Prague summit?

The head of the NATO Centre of Weapons of Mass Destruction, NATO Headquarter, in Brussels, Ted Whiteside presented how EAPC can contribute to the goals of the Prague summit.

As a background a presentations was given on NATO's work on non-proliferation and the Prague summit. The response included support for non-proliferation regimes, deterrence, civil emergency planning and defence-related response. Concerning the Civil Emergency Action Plan it includes an inventory, common training, extensive use of Euro-Atlantic Disaster Response Coordination Cell (EADRCC). There was a strong EAPC role already and many workshops in the past. The NBC Defence deliverables were listed as;

- Deployable NBC Analytical Laboratory,
- NBC Event Response Force,
- Virtual Centre of Excellence for NBC Weapons Defence,
- Disease Surveillance System,
- NATO Chem-Bio Defence Stockpile,
- CBRN Battalion.

He also pointed to some areas that could be useful for EAPC cooperation

- Progressive involvement in defence deliverables
- Partnership interoperability goals
- Technical exchanges LG7 and Science
- Continued DGP/EAPC meetings
- More robust EAPC Disarmament Experts sessions

•Greater use of EAPC joint communiqués
•Possibility of a major EAPC bio simulation exercise
•Progressive understanding of Missile Defence issues

See also appendix 4:1

7. Export controls – the role and how they function

Presented by Richard Ekwall Deputy Head, Department of Strategic Export Controls, Swedish Ministry for Foreign Affairs. An overview was given of export control regimes and their role. There are significant risks for proliferation and use of WMD. Export control regimes are needed in addition to multilateral treaties (BTWC, CWC and NPT . Effective export controls require international cooperation but they are always exercised at the national level. The regulations in the European Union were also reviewed.

See also appendix 4:2

8. Antiproliferation (CBW)

This was presented by Dr Tony Phillips former Technical Manager Non-Proliferation, Dstl Chemical and Biological Sciences, Porton Down, UK. He discussed design principles for control of access to information and materials for chemical and biological weapons. He elaborated on the role of government scientists in designing and in the implementation of the export controls.

See also appendix 4:3

9. Low level threats

Presented by Dr Björn Sandström from the Swedish Defence Research Agency, Division for NBC Defence in Umeå, Sweden. He discussed what history can tell us about low level threats, terrorism and criminality with CBRN-agents. One point mentioned was that there exists no common definition of what a low level CBRN incident is. He also gave a brief introduction to the NATO/PfP SIBCRA (Sampling and Identification of Biological, Chemical and Radiological Agents) working group.

See also appendix 4:4

10. Environmental and health risks for deployed personnel in international operations

Presented by Birgitta Liljedahl from the Swedish Defence Research Agency, Division for NBC Defence in Umeå, Sweden. In planning and during operations there is a need for good reliable and information on environmental risks and NBC risks in a potential area of operations. A specific information system where a large amount of information from many sources is collected, reviewed and made available in a GIS system. These means that the information is presented in the form of maps to which further information can be made available depending on type of questions.

See also appendix 4:5

11. Surveillance and field epidemiological team

This was presented by Dr Anders Tegnell from the Swedish Centre for Disease Control (SMI). He gave an overview of the newly established Swedish field epidemiological group (CFG). It can help with epidemiological investigations nationally but also internationally. The group can be activated at short notice and the members have international experiences in the area of infectious disease control. He discussed disease surveillance in the context of bioterrorism events and elaborated on the problems of using existing systems for surveillance. He also discussed other alternative sources of information and data and in conclusion he presented indicators of deliberate release of infectious diseases.

See also appendix 4:6

12. Barents Rescue 2001

Lessons learned from international co-operation during the N-reconnaissance exercise Barents Rescue 2001 were presented by Dr Robert Finck from the Swedish Radiation Protection Agency (SSI).

An international exercise on the theme of a nuclear emergency took place in northern Sweden in 2001. In the exercise, named Barents Rescue LIVEX 2001, 24 countries participated actively or as observers. A part of the exercise concerned the search of orphan gamma radiation sources over large areas using airborne and car-borne measuring equipment. In this part of the exercise, named the Gamma Search Cell (GSC), teams from Austria, Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia and Sweden participated. The search exercise was made as realistic as possible with real gamma radiation sources. It took place on the large military exercise grounds at Boden in northern Sweden during three days, September 17 - 19, 2001. Altogether 9 airborne gamma spectrometry (AGS) teams, 3 airborne search (AS) teams and 19 car-borne search teams (CGS) performed search measurements. The sources used were Co-60, Cs-137, Mo-99, Ir-192, I-131, Am-241

and some boulders containing natural uranium ore, in total 44 sources, ranging in activity between 0.0004 and 41 GBq. The planning, methods and results of the international Gamma Search Cell exercise will be described in the presentation together with the experiences gained from the international co-operation during the planning and realisation phases..

It is a difficult task to find and identify hidden radioactive sources; the results of the Barents Rescue Gamma Search Cell exercise clearly indicate that. It is of course possible that the source activities in a real emergency situation are stronger and that the search teams know what radionuclide and source type to look for. Nevertheless, the participating teams found it very valuable to have their equipment tested under actual field conditions and the exercise provided a good opportunity to practise and test the teams' own search strategies. Many problems had to be dealt with such as background discrimination, how the system alerts when passing a source, on-line and post processing of data and accurate positioning. The teams felt that they were able to participate in large-scale search operations and to locate, identify and report lost sources, but the search might not be effective in all situations. Success will depend on a number of things such as planning, organisation, command and control together with the measuring equipment, tactics and endurance of the teams and of course the type and activity of lost sources but also to some extent sheer luck.

12.1 References

Thomas Ulvsand, Robert R. Finck and Bent Lauritzen, editors, NKS/SRV Seminar on Barents Rescue 2001 LIVEX Gamma Search Cell, Proceedings, Report NKS-54, April 2002

Robert R. Finck and Thomas Ulvsand, Search of orphan gamma radiation sources. Experiences from the Barents Rescue 2001 Exercise. Swedish Defence Research Agency, Technical Report FOI-R-0707-SE, January 2003

See also appendix 4:7

13. Legal aspects on international peacekeeping operations

Presented by Stefan Ryding-Berg Chief Legal Advisor of the Swedish Armed Forces. He discussed the legal aspects on international peacekeeping operations like the mandate, chapter VI and VII of the UN, consent of territorial state, self-defence, military/policy tasks and rules of engagement.

See also appendix 4:8

14. Ways to create a multinational rapid response force

This was presented by Kjell Larsson from the Swedish Rescue Service Agency (SRV). He gave an overview of the Swedish Chemical Support Team that has been established as a resource for the OPCW in the Haag. This is a Swedish offer under Article X of the CWC. This is a team that is self sufficient for a number of days and with their own transportation. They have 10 hours stand-by on alert and can be airborne within a short time. They can give support to people affected by chemical

warfare agents or industrial chemicals. There are 4 teams each consisting of 35 people. Each team consists of a team staff, two rescue teams and a safety team.

See also appendix 4:9

15. Multinational Co-operation in Chemical, Biological, radiological and Nuclear (CBRN) Defence: NATO's multinational CBRN Defence Battalion

Presentation by Lt.Col. C. Wolterbeek, WMD Centre, Defence Policy and Planning, NATO HQ, Brussels, Belgium. The increasing proliferation of chemical, biological, radiological and nuclear (CBRN) weapons, also referred to as weapons of mass destruction (WMD), is posing an increasing political and military threat from countries of concern and non-state actors. Having the capabilities to deter and defend against this threat is vital. It was also noted that CBRN releases other than attack (ROTA) could have severe impact on deployed troops and cause health problems. ROTA does cover environmental industrial hazards like for example LLR (low level radiation), TICs (toxic industrial chemicals) and HPVs (high production volume chemicals) when such hazards are able to cause damage to deployed forces. Therefore NATO reviewed its defence against the whole range of unconventional threats.

15.1 Policy Guidance and Capabilities Evaluation

In spite of the improvements resulting from the Defence Capabilities Initiative, shortfalls remain in a number of critical capability areas, including CBRN defence. At the Prague Summit in November 2002, Heads of State and Government endorsed the Prague Capabilities Commitment, including a new capabilities initiative focussing on four key operational areas where NATO does have shortcomings, one of which was defence against CBRN attacks. These topics, amongst others the Prague Initiatives and overall policy guidance for NBC Defence, have been addressed already by my boss, de Head of the WMD Centre, Ted Whiteside. I will concentrate on the Prague topics that evolved into the CBRN battalion.

It was noted that there were certain core NBC defence capabilities that all forces must possess if they were to be adequately protected against CBRN weapons and ROTA. Therefore, some of these are not natural candidates for responsibility to be divided in a multinational co-operative venture. However, joint R&D and procurement are possible and could include:

- medical countermeasures.
- full individual physical protective equipment.
- medical surveillance.
- immediate decontamination equipment.
- chemical weapon detectors.
- CBRN event (hazard warning and reporting) systems.

Allies could also co-operate through role specialisation, role sharing, common procurement, jointly owned and operated, or common equipment pooling. Such co-operation has been envisioned in the following areas:

operational and full decontamination.
CBRN survey and reconnaissance monitoring.
CBRN defence HQ elements.
point and standoff biological weapon (BW) detection and identification.

15.2 Recent Initiatives

In the first instance NATO looked at its NBC Defence Doctrine and Military Concept for Defence against WMD. Inter alia, a revised draft of the overarching NBC Defence Doctrine for NATO forces was submitted to Allies and an interim Bi-SC[1] Biological Warfare Defence Concept was approved.

In addition, there has been a review of the NBC units earmarked to move within 30 days notice as part of the NATO Response Force (NRF). The NRF should include not only the standard "classic" NBC reconnaissance, detection, decontamination capabilities but also additional NBC reconnaissance of a broad range of relevant NBC hazards that can cause acute health problems within deployed NATO troops and therefore impact NATO operations (for example TICs). Moreover, some capacity to decontaminate personnel and equipment at an incident site would be required.

By the end of this year, NATO will have evaluated the prototypes of both a NBC Event Response Team (ERT), designed to provide specialist advice to the commander in the field, and Deployable NBC Laboratories and Sampling teams. About 70 percent of the exercise and evaluation programme is finished, and the teams are now in the validation phase, and therefore their Concept of Operations (CONOPS) and Standard Operational Procedures (SOPs) can be finalised.

Current CBRN STANAGs (NATO Standardisation Agreements) and ATPs (Allied Tactical Publications) are being re-evaluated in light of the changes in the analytical requirements and capabilities. Change recommendations are envisioned to be submitted to NATO in spring 2004. Both these Teams will eventually be subsumed into the forthcoming larger multinational CBRN Defence capability.

15.3 NATO Response Force (NRF)

The Allies agreed this summer to accelerate the development of a multinational CBRN Defence Battalion capability within the framework of the NATO Response Force (NRF). This capability will inherit the procedures that have evolved during the prototype team development year. Only recently, a statement of requirements for the NATO Multinational CBRN Defence Battalion was released. However it should be noted that the CBRN battalion or one of its sub units, besides support to the NRF, could be used separately for other tasks.

The NRF is a high readiness, joint, combined and mission tailored expeditionary force of limited size, capable of performing certain missions on its own for up to 30 days without resupply. The NRF will be able either to participate in an operation as part of

[1] Bi-SC: the two Strategic Commands, SACEUR (Supreme Allied Commander, Europe), its headquarters: Supreme HQ Allied Powers Europe (SHAPE) and SACLANT (Supreme Allied Commander, Atlantic) that after the reorganisation is transformed into Supreme Allied Commander Transformation (SACT).

a larger force, or to serve as an initial entry force that prepares the theatre for follow-on forces, according to the principle "first force in, first force out".

The NRF will have a land component able to sustain a brigade size formation, an air component able to execute all necessary air tasks and fly up to 200 sorties per day, in addition to support sorties. The NRF Maritime component will comprise a force up to NATO Task Force (NTF) size, including a carrier battle group with associated units, like over the shore assault capabilities. If operationally required, Specialist Functions, such as special operations forces or the CBRN battalion, could be committed to the NRF. The NRF will have the necessary strategic mobility, movement and transportation support. Its Initial Operation Capability (IOC) is planned for October 2004; its Full Operational Capability (FOC) is envisioned for October 2006.

15.4 NATO Multinational CBRN Defence Battalion

It is intended that the NATO Multinational CBRN Defence Battalion will comprise the following elements:

A battalion headquarters staff and support capabilities.

The prototype NBC Event Response Team will have evolved into a Combined Joint Assessment Team (CJAT). The CJAT will provide CBRN expert advice and assessment to NATO commanders at all levels, concerning pre- and post CBRN operations. It should include a medical doctor, radiobiologist, toxicologist, microbiologist, meteorologist, and a NBC EOD specialist.

A deployable NBC Analytical Laboratory (DNBC-AL) comprising three specialist (radiological, chemical, and biological) mobile analytical laboratories, scientific advice and sampling, decontamination and NBC EOD teams.

An NBC reconnaissance company, including a meteorological support section.

One light and one heavy decontamination company

Combat Support comprising adequate strategic airlift and sealift capabilities and bases, and will include a live agent training facility.

15.5 Force Generation Process

This has developed over several meetings this Summer with the final expert level planning meeting expected in Maastricht (the Netherlands) 16 –17 September of this year. The formal Force Generation Conference has been planned to take place in October 2003 and will be linked to NRF force generation thus avoiding duplication and ensuring consistency and cohesion with the NRF structure. At present, the proposed timelines are being met and the CNRN Defence Battalion will announce its IOC by December this year after its CONOPS/SOPs have been approved by the Military Committee. After a period of training and certification, designated as Phase II, the first unit to be on call, will declare FOC in July 04.

Force generation is being centred on the principle of a Lead Nation, in the first instance this is the Czech Republic, but the proposal is that there will be rotation for all elements of the battalion. Multi-national funding is being considered. The Czech Republic will be required to supply the battalion's HQ and command structure and the

support capability. To the lead nation's core structure, Allies are expected to contribute the necessary CBRN specialist unit modules. During Phase I the training of the allied contributions is a national responsibility. This training phase includes basic infantry skills, NBC defence training, first aid, fire and rescue and basic language proficiency in English.

In Phase II, the NMAs[2] will oversee the appropriate elements of team training. This will include collective functional area or multifunctional (sub) battalion training, collective CBRN Defence Battalion training, and training in the pertinent STANAGs and AJPs. Important elements in Phase II are Standardisation and Interoperability. Standarisation will be achieved through the use of common, compatible and/or interchangeable operational, materiel and administrative procedures to attain interoperability. Interoperability is the ability of multinational forces to train exercise and operate effectively together.
Successful conclusion of this training will lead to certification.

The following main Multinational CBRN Defence Battalion tasks have been recommended:

- To plan procedures and scenarios and to conduct deployment operations.
- To develop and prepare for deployment on receipt of warning, activation, and movement orders.
- To prepare for command and control of all associated NBC Defence units.
- To prepare for NBC reconnaissance operations, including warning and reporting.
- To provide both operational and full decontamination of personnel, materiel and fixed sites.
- To detect, monitor and operationally identify all listed CBRN EIH (TICs, LLR) and ROTA substances.
- To provide all CBRN assessments and to advise NATO commanders at all levels.
- To plan, co-ordinate and conduct sustainment operations, including force protection of the battalion.

See also appendix 4:10

16. Sampling and analysis

Presented by Dr Henri Garrigue from the WMD Centre, Defence Policy and Planning, NATO HQ, Brussels, Belgium. He discussed why biological warfare agent detection is difficult. He gave an overview of which technologies are available. Further he discussed the problems sampling aerosols and the natural microbial background in air. He reviewed the advantages and disadvantages with different analytical approaches like using genetic probes and DNA chips.

See also appendix 4:11

[2] NATO Military Authorities

17. Medical protection

Presented by Dr Les Nagata Defence R&D Canada, Suffield, Canada. He gave an overview of the ongoing research at Suffield. Nerve agent treatment, first responder training, development of prophylaxis and therapies against biological warfare agents including vaccines and human antibodies were reviewed.

See also appendix 4:12

18. Physical protection

This was presented by Dr Ola Claesson from the Swedish Defence Research Agency, Division for NBC Defence in Umeå, Sweden. He discussed protective masks and suits as well as NBC-protection for the soldier of the future. The requirements for the suits protection have changed and so have the test methods. Novel materials and concepts for low level NBC-protective clothing systems are being developed.

See also appendix 4:13

19. Conclusions of the seminar

Åke Sellström gave some concluding remarks on the need for cooperation in this area and closed the seminar.

In general the following could be concluded from the seminar:
The seminar was organised in the framework of the Euro-Atlantic Partnership Council (EAPC) Approximately 70 experts attended.

The seminar examined a number of key challenges in the area of chemical, biological, radiological and nuclear weapons (CBRN).

Participants examined in depth the defence related response to CBRN risks and threats. Discussion also centred on practical means to improve international cooperation to combat the overall problems of proliferation.

In the emerging conclusions, there was a broad commonality of views in the following areas:

- To date, low level attacks using CBRN agents have claimed relatively few lives, but there are increasing risks of larger-scale destructive attacks.
- Risk assessment for environmental industrial hazards (EIH) must be an integral part of reconnaissance missions prior to deployment of forces.
- Emphasis should be placed on development of key capabilities to include;
- medical surveillance,
- analytical laboratories (deployable),
- medical treatment and equipment to deal with chemical and biological agents,
- simulation technologies for training purposes.

Participants also agreed the following broad approach:

There should be a more focused work programme within the EAPC which could include;

- progressive involvement by Partners in Alliance CBRN defence initiatives,
- increased information exchange and potential Partner participation in the Alliances' Defence Battalion,
- continued EAPC expert-level cooperation within working groups,
- more frequent EAPC Disarmament Expert meetings, to address the underlying political issues of proliferation,
- identification of specific partnership activities to assist some EAPC nations' development of export control measures and legislation,
- greater use of EAPC Ministerial statements to take common positions on proliferation trends,
- preparation of a major EAPC bio simulation exercise,
- progressive understanding within the EAPC of the risks associated with ballistic missile proliferation, and the role which could be played by missile defence systems.

Appendix 1

List of participants - EAPC meeting in Stockholm

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Appendix 2

Information on the NATO Weapons of Mass Destruction Centre

Chemical, biological and nuclear weapons in the hands of terrorists or states of concern are a potential threat to everyone. NATO members share a determination to combat the proliferation of weapons of mass destruction (WMD) and their means of delivery. The Weapons of Mass Destruction Centre is the focal point of Alliance expertise and efforts to this end. Opened in May 2000, it comprises an interdisciplinary team with expertise in chemical weapons, biological agents, ballistic missiles, force protection, intelligence, and political aspects of arms control and non-proliferation regimes.

In spite of some progress in strengthening international non-proliferation regimes in recent years, the proliferation of nuclear, biological and chemical weapons and their means of delivery can pose a direct military threat to Allies' populations, territory, and forces. The WMD Centre was created in response to these concerns and draws its mandate directly from the Alliance's 1999 Washington Summit and the WMD Initiative.

Specifically, the WMD Centre has the following six broad objectives:

to ensure a vigorous debate at NATO leading to strengthened common understanding among Allies on WMD issues and how to respond to them;

to improve the quality and quantity of intelligence and information sharing among Allies on proliferation issues;

to support the development of a public-information strategy by Allies to increase awareness of proliferation issues and Allies' efforts to support non-proliferation efforts;

to enhance military readiness to operate in a WMD environment and to counter WMD threats;

to strengthen the exchange of information concerning national programmes for bilateral WMD destruction and assistance - specifically how to help Russia destroy its stockpiles of chemical weapons; and

to enhance the possibilities for Allies to assist one another in the protection of their civil populations against WMD risks.

Some states, including those on NATO's periphery as well as in other regions of the world, sell or acquire or try to acquire weapons of mass destruction and their means of delivery. In addition, the materials and technology required to build such weapons are becoming more common, while detection and prevention of their illicit trade is an enormous challenge. Moreover, non-state actors have demonstrated both the desire and potential to build and the willingness to use these weapons.

The Alliance has recognised since the early 1990s the importance of strengthening efforts against proliferation. The principal goal remains that of preventing proliferation from taking place, or, should it take place, to reverse it through diplomatic means. In addition, the Alliance has to ensure that it has an appropriate defence posture against the possible use of weapons of mass destruction with the capability to address appropriately and effectively the threats that the proliferation of weapons of mass destruction and their means of delivery pose.

The WMD Centre supports the work of a number of NATO committees. These include the Senior Politico-Military Group on Proliferation (SGP) and the Senior Defence Group on Proliferation (DGP), which deal respectively with the political and defence dimensions of NATO's response to proliferation; and the Joint Committee on Proliferation, which coordinates and brings together the work on both aspects. The SGP considers a range of factors in the political, security and economic fields that may cause or influence proliferation and discusses political and economic means to prevent or respond to proliferation. The DGP

addresses the military capabilities needed to discourage WMD proliferation, to deter threats and use of such weapons, and to protect NATO populations, territory and forces.

In addition, the WMD Centre supports the Senior Political Committee in its work dealing with theatre missile defence, cooperation with Russia and issues related to the Alliance's response to terrorism following the 11 September 2001 attacks against the United States.

Appendix 3

NATO states (19)
Belgium
Canada
Czech Republic
Denmark
France
Germany
Greece
Hungary
Island
Italy
Luxemburg
Netherlands
Norway
Poland
Portugal
Spain
United Kingdom
Turkey
United States

Partner states joining NATO
Austria
Belarus
Bulgaria
Estonia
Latvia
Lithuania
Romania
Slovak Republic
Slovenia

Partner states (27)
Albania
Armenia
Azerbajdzjan
Bulgaria
Croatia
Estonia
Finland
Georgia
Ireland
Kazakstan
Kirgizistan
Latvia
Lithiania
Makedonia
Moldavia
Romania
Russia
Switzerland
Slovak Republic
Slovenia
Sweden
Tadzjikistan
Turkmenistan
Ukraine
Uzbekistan

How can EAPC contribute to the goals of the Prague Summit?

Stockholm
18 September 2003

E.C. Whiteside
Head WMD Centre
NATO HQ

OVERVIEW OF PRESENTATION

- **The challenge of WMD**
- **Alliance response at Prague**
  - **support for non-proliferation regimes**
  - **deterrence**
  - **civil emergency planning**
  - **defence-related response**
- **What the EAPC can do**

INHERENT POLITICAL ISSUES

- **Asymmetry**
- **Regional Instability**
- **Secondary and subsequent proliferation**

NATO's RESPONSE TO PROLIFERATION

- **Nuclear Non-Proliferation Treaty (NPT)**
  - **The 2 major principles**
  - **IAEA Safeguards**

<u>but</u> :

- **Not universal membership**

- **BIOLOGICAL AND TOXIC WEAPONS CONVENTION (BTWC)**

  - In effect since 1972

but :

  - Lack of implementation mechanisms
  - Problems of dual use technologies

NATO DETERRENCE

- Based on mix of conventional and nuclear forces
- Goal is to deter coercion
- Unacceptable risk for adversary

Prague Summit

- The context:
  - new members
  - new capabilities
  - new relationships

Prague Summit

- The security message:
  - "determined to deter, disrupt, defend and protect"

Prague Summit

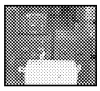
- Civil emergency planning
- Defence issues
- Missile defence

Civil Emergency Action Plan

- Inventory
- Common training
- Extensive use of Euro-Atlantic Disaster Response Coordination Cell (EADRCC)
- Strong EAPC role already
- Many workshops in the past

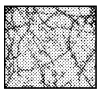
NBC DEFENCE DELIVERABLES

Deployable NBC Analytical Laboratory



Quickly and easily transportable into theater

Investigate and collect samples of possible NBC contamination

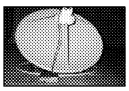


Conduct highly reliable scientific analysis of samples

NBC Event Response Force

Assess the effects of an NBC event

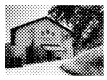
Advise NATO Commanders on mitigating effects of an NBC event



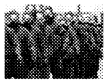
Enable NATO Commanders to "reach back" to national experts for technical advice

Virtual Center of Excellence for NBC Weapons Defence

Enhance Senior-level NBC education



Improve operational understanding of NBC defense



Expand and strengthen NBC defense training

NATO Chem-Bio Defence Stockpile

Identify and share national stockpiles

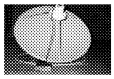
Rapidly move needed defense materiel into theater

Improve medical treatment protocols

Disease Surveillance System

Collect info on unusual disease outbreaks

Alert NATO commanders of a biological outbreak



Fuse data with other information sources

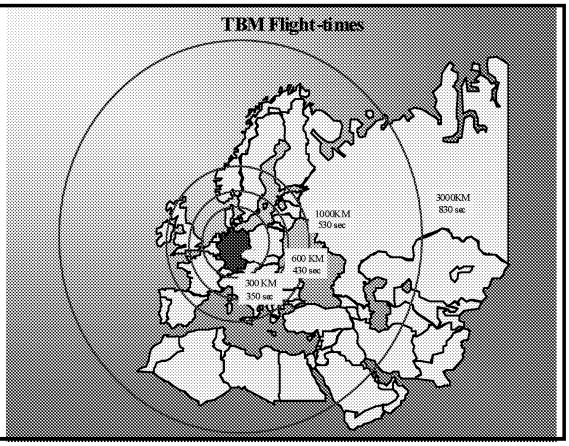
CBRN BATTALION

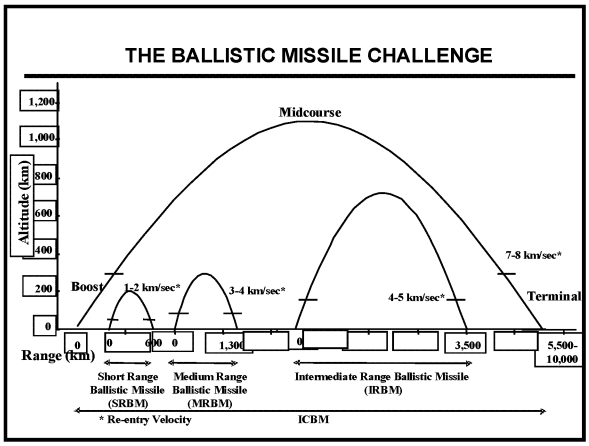
- Initial operating capability by 1 December 2003
- Compatible with the NRF

MISSILE DEFENCE AND THEATRE MISSILE DEFENCE (TMD)

DEFENCE - TO INCLUDE MISSILE DEFENCE

- The politics of devaluing the adversary
- Many Theatre Missile Defence (TMD) programs





What the EAPC can do:

- Progressive involvement in defence deliverables
- Partnership interoperability goals
- Technical exchanges LG7 and Science
- Continued DGP/EAPC meetings
- More robust EAPC Disarmament Experts sessions
- Greater use of EAPC joint communiqués
- Possibility of a major EAPC bio simulation exercise
- Progressive understanding of Missile Defence issues

Swedish EAPC Seminar

Stockholm, September 18 - 19, 2003

Richard Ekwall
Deputy Head
Department of
Strategic Export Controls
MFA

Preventing the proliferation of WMD

Export Controls

Their role and how they function

Significant risks for proliferation and use of WMD

- States keepingWMD option open
- Missile programmes
- DPRK, Iran
- India, Pakistan
- Terrorist Threat / September 11, 2001

Countering WMD proliferation

NPT, BTWC, CWC - primary international mechanisms

- Obligation not to acquire or use WMD
- Obligation not to transfer WMD, or to assist, encourage or induce (states, groups) to manufacture or otherwise acquire WMD
- National implementation measures

Weaknesses

- Universal adherence to the treaties not yet attained
- Risks of non-compliance (c.f. DPRK, Iran)
- Terrorists outside the direct scope

Need for additional measures Export Controls

- Choke the possibilities for states and terrorists to obtain technologies an products for the manufacturing of WMD
- Instrument to assist States Parties in fulfilling their non-proliferation obligations under the treaties

Export Controls Essential Complement to the Treaties

Export control always exercised at the national level

National Export Control System

Functions

- Policy - Government (ministry)
- Licensing - Ministry/Authority
- Enforcement - Customs, Intelligence (police, military)

Effective export controls require international co-operation

- European Union
- Multilateral Export Control Regimes (supplier countries / 30 - 40 Member States per regime)

European Union

- Council Regulation (EC) No 1334/2000 setting up a Community Regime for the Control of Exports of Dual-Use Items and Technology
- Lists of products subject to export control at the national level (harmonisation)
- The Regulation legally binding for the EU Member States
- National legislation complements the Council Regulation

Multilateral Export Control Regimes

- Nuclear Suppliers Group (NSG) - NW
- Australia Group (AG) - BW, CW
- Wassenaar Arrangement (WA) - Conv. W + high tech products not covered by the other regimes (c.f. COCOM)
- Missile Technology Control Regime (MTCR) - missiles

The Regimes

How they operate

- Member States jointly identify what products to submit to export controls at the national level - continuous updating of the product lists in the light of technological developments
- Member States exchange information relating to proliferation threats

Promotes harmonised and effective national export controls

The interrelationship between the Regimes and the European Union

The product lists of the Regimes incorporated into Council Regulation 1334/2000

Direct chain: Regimes > EU > individual EU Member States' export controls

"Catch-all"

- Dual-use products not included in the product lists of the Regimes
- End-user oriented export controls
- Risk of diversion to WMD programmes

The Catch-All Mechanism

As regards dual-use items, the EU Member States apply the following catch-all clauses contained in Council Regulation 1334/2000:

Art.4, para 1: An authorisation shall be required for the export of dual-use items not listed in Annex I if the exporter has been informed by the competent authorities of the Member State in which he is established that the items in question are or may be intended, in their entirety or in part, for use in connection with the development, production, handling, operation, maintenance, storage, detection, identification or dissemination of chemical, biological or nuclear weapons or other nuclear explosive devices or the development, production, maintenance or storage of missiles capable of delivering such weapons.

Art.4, para 4: If an exporter is aware that dual-use items which he proposes to export, not listed in Annex I, are intended, in their entirety or in part, for any uses referred to in paragraph 1, 2 or 3 he must notify the authorities referred to in paragraph 1, which will decide whether or not it is expedient to make the export concerned subject to authorisation.

The importance of the catch-all mechanism, and requirements

- essential instrument for barring access, if needed, to non-listed dual-use items suitable for WMD manufacturing
- useful as a flexible complement to the product lists, which might not be updated as quickly as desired
- catch-all mechanism raises the need for intelligence as well as industry awareness actions by the authorities
- enhanced effectiveness of the mechanism requires international co-operation

Challenges ahead

- Keep the product lists fully updated
- Effective use of the Catch-All Instrument
- Intelligence a lynchpin
  - countries of concern (activities)
  - sensitive end-users
  - procurement patterns
- Outreach to third countries (including transhipment states)
  - raise awareness of proliferation risks
  - promote application of the Regimes' guidelines and product lists
  - assist in establishing effective national export control systems

EU: Way Forward

- Basic Principles for an EU Strategy against Proliferation of Weapons of Mass Destruction
- Action Plan for the Implementation of the Basic Principles
- Declaration on Non Proliferation of Weapons of Mass Destruction

Objectives

- universalise further the key disarmament and non-proliferation treaties and ensure compliance
- enhance EU support for agencies in charge of verification (e.g. IAEA, OPCW)
- foster the role of the UN Security Council
- strengthen export control policies and practices within EU and beyond, in co-ordination with Partners

Dr Tony Phillips

formerly
Special adviser/non-proliferation
Dstl Porton Down, UK MOD
****
"Antiproliferation (CBW)"

Establishing the norm : proscribing CBW

- Implementing the provisions of the BTWC
- Implementing the provisions of the CWC
  - National legal measures
  - National measures to monitor
  - Government shows commitment. domestic and international
  - Scientists, industrialists etc, worldwide behavioural norms
- The potential problem:
  - Acquisition of CBW by states.
  - Acquisition of CBW by non-state actors. Terrorists. Post 9/11

Design principles for control of access to information and materials for CBW. 1

- Most data and materials (D/M) for CBW are not specific for offence
  - Much of it would also be relevant to a DEFENSIVE programme.
- Some of the D/M used in defence programme is owned by the government and so access to it can be controlled and tracked.
- But most of the D/M for defence (and offence) are encountered in other legitimate applications:
  Industry, agriculture, horticulture, medicine, veterinary medicine, phytopathology, biotechnology, etc.
  These data and materials are DUAL-USE

Design principles for control of access to information and materials for CBW. 2

- Since little of the dual-use D/M is owned by governments, special national measures are used to control and monitor access to reduce the risks of CBW proliferation.
- Laws and regulations: Export controls
  - Licence transfers
  - Permissive. Expedited arrangements increase efficiency
  - END-USER scrutiny
- Laws and regulations:
  - domestic possession (facilities, people)
  - In-country transfers, transport

Design principles for control of access to information and materials for CBW. 3

- Legitimate access to dual-use D/M must be allowed, without delays:
  - Precursor chemicals (chemical industry, research)
  - Strains of pathogens (biomedical R&D, vaccine R&D, disease outbreaks)
- Some dual-use items are not widespread because they currently have little relevance for legitimate applications.
  - Little trade in these items
  - Preventing access can be very effective in delaying a CBW programme

Design principles for control of access to information and materials for CBW. 4

- Measures for export control or domestic possession must be FOCUSED on key items for CBW
- If measures are too broad
  - Huge administrative burden for government, traders and facilities
  - Licensing system overload could bring system to a halt
  - Academia and industry withdraws support, ignores regulations
  - Risk to humanitarian and economic objectives
- BUT, a narrow design risks providing a blueprint for the most desirable CBW items.

Design principles for control of access to information and materials for CBW. 5

- Principles applied during design of CBW export controls:
  - **Choke point.** Absence of the item disadvantages the proliferator
  - **Controllable.** Availability largely by exports from countries where controls can be operated. Low volume trade.
  - **Credible.** The logic is supported by academe and industry

Design principles for control of access to information and materials for CBW. 6

- Scientific and technical expertise of designers
  - Envisage types of D/M that might be acquired to develop and produce CBW
  - Familiar with broad range of legitimate dual-use applications
  - Draw up a short list of items for control. Test by the "three Cs".
- Countries share expertise during design. AG
- Other countries reflect this expert work in their own controls.

Design principles for control of access to information and materials for CBW. 7

- Role of government scientists in effective implementation
  - Assist in awareness raising in academe and industry
  - Assist official machinery in assessing licence enquiries and applications
    - Technical assessment of specifications
    - Credibility of proposed end-use
    - Dialogue with exporters
- Mechanism to provide technical advice that is technically competent, consistent, and defendable in court.
  - Training. Regular audit. Funding.

Specifics of access control. 1

- Types of legally based measures:
  - Export controls - WMD, AT or biosecurity legislation
- Catch-all prohibitions and provisions.
  - Legal basis e.g for seizures of goods
- Specific categories of "key" CBW items:

1. THE RAW MATERIALS
   - Certain pathogens. Held in a few labs and culture collections. Human, animal, plant.
   - Toxins
   - Biologicals modified for hostile use. Military export controls.

Specifics of access control. 2

- CW precursors and agents with little commercial relevance
  - Nerve agents. Legitimate defensive work.
  - Licence possession (CWC implementation)
  - Licence exports by Military controls
- CW precursors and agents with industrial uses
  - Large scale industry use and export
  - Declare or licence possession (CWC implementation): threshold consistent with burden.
  - Licence exports by dual-use controls

Specifics of access control. 3

2. THE EQUIPMENT

- Specially designed weapons dissemination equipment
  - Ban under CWC and BTWC legislation, AT legislation
  - Licence exports by military controls
- Dual-use equipment
  - Production and handling of agents in labs or industry
  - Licence exports by dual-use controls
  - Licensing or declaring possession could be burdensome and criticised by many as disproportionate to the security risk

Specifics of access control. 4

3. THE KNOWLEDGE

- Information and skills of utility to a CBW programme
  - In areas of research and teaching at universities
  - Screen postgraduate applications.

  1994 UK voluntary vetting scheme to disrupt state proliferation training programmes
- Screening of personnel backed by legislation. Recent AT or biosecurity measures.
- Export controls can cover technology transfer whether by tangible or intangible means.

Low Level Threats

Intentional Dispersal of CBR(N)-Agents

Björn Sandström

FOI

Speech Outline

- What can history teach us about:
  - –Low level attacks
  - –Terrorism
  - –Criminality

  with CBRN-agents?
- Brief introduction to the NATO/PfP SIBCRA working group
- Some personal conclusions

FOI

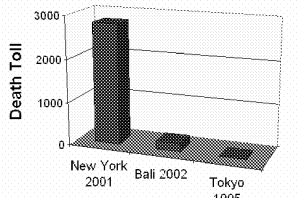
Definitions of CBRN Agents

- C = Chemical
  - **Chemical substances, classical poisons, and toxins harmful to man**
- B = Biological
  - **Bacteria, viruses, and toxins harmful to man**
- R = Radiological
  - **Used for radioactive elements which cannot undergo fission, but give rise to radiation injury**
- N = Nuclear
  - **Used for fissionable elements, primarily Uranium-235 and Plutonium-239**

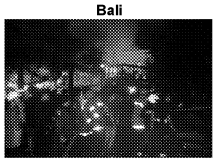
FOI

New York

Fatalities from Recent Terrorist Actions



Bali



Tokyo

FOI

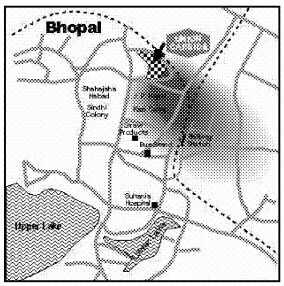
Tokyo 20 March 1995

- 5 subway trains attacked by 10 Aum members
- Plastic bags with sarin punctured by umbrellas
- 5,510 sought medical attention in 278 hospitals and clinics – 688 victims needed ambulance transport – 12 died
- 135 of 1,364 emergency personnel (10%) who were at the incident showed acute symptoms and sought medical treatment

FOI

Bhopal Gas Catastrophe 1984

- **Methyl Isocyanate (MIC) was released from Union Carbide plant**
- **In a city of 800,000:**
  - **A minimum of 2,500 people were killed**
  - **50,000 were hospitalized**
  - **100,000 needed medical treatment**



FOI

Other Life-Threatening Chemicals

- Ammonia
- Chlorine
- Sulfur Dioxide

Important Hazard–Ranking Indexes

- **Volume**
- **Toxicity**
- **Vaporization Temperature**

FOI

Low Level Attacks WW I

- Biological Sabotage by Germany in 1915 – 1918

Agents: Anthrax and Glanders

- **USA – Anton Dilger, laboratory Wash DC, infected horses and mules sold to the Allies**
- **Romania – Captain Rudolf Nadolny, Romanian animal trade with Russia, cultures were later found at German legation**
- **Spain – Unknown agent, horse trade with France**
- **Argentina – Herman Wuppermann, cattle, horses and mules, no laboratory**

FOI

continued

- **Norway**
- **Anthrax**
- **Baron Otto Karl Robert von Rosen, 33**
- **Swedish second lieutenant '05**
- **Said he was acting for Finnish independence**
- **Targets were horses and reindeers transporting arms to Russia**
- **von Rosen was extradited to Sweden**

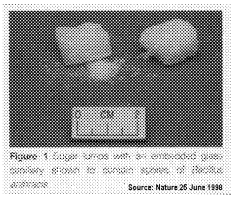
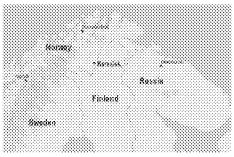


Figure 1 Sugar cubes with an embedded glass cylinder, shown to sustain spores of Bacillus anthracis. Source: Nature 26 June 1998



FOI

Low Level Attacks WWII

- In 1946, NAKAM, an organization of Jewish avengers, poisoned bread with arsenic in a German POW-camp in Nuremburg
- Claims that several hundreds were killed – gross exaggeration
- Rather, a couple of hundred prisoners became ill
- Apparently, NAKAM also had large plans to poison drinking water supplies in Germany, but these were abandoned

FOI

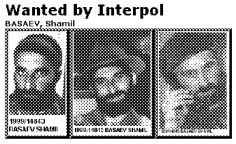
Low Level Attacks (cont'd)

- It is claimed that the Mau Maus population of Kenya used plant toxins to poison cattle during the 1952-56 uprising against the British

FOI

Low Level Attacks (cont'd)

- **On 23 Nov. 1995, Chechen separatist leader Shamil Basaev informed the NTV television company in Moscow where they could find a Cs-137 source**
  - **The relatively weak radiation source was soon found by Russian security agents in the Izmailovskii Park**



At the same time, Basaev also threatened to blow up two hidden radiation sources

- **No explosion occurred**

FOI

Low Level Attacks (cont'd)

- In Dushanbe, at New Year's Eve 1995, Tajik opposition members gave cyanide-poisoned Champagne to Russian soldiers
  - **Six of the soldiers and the wife of another were killed**
  - **Several other people became sick**

FOI

Low Level Attacks (cont'd)

- It is claimed that the Revolutionary Armed Forces of Colombia (FARC) have used chemical agents on several occasions
- Four policemen were killed in an explosion in 2001 – three of them died from the effects of some kind of gas
- In 2002, the explosion of an ammonia gas cylinder killed four people
- Attempts to poison water supplies

FOI

B-criminality (individuals)

1910 Patrick O'Brien de Lacy (with aid from Dr. Vladimir Pantchenko) killed his brother-in-law with a *diphteria* toxin injection

1964 Dr Mitsuru Suzuki, Japan, *Salmonella typhi*, 4 dead

1995 Larry Wayne Harris, Ohio, *Yersinia pestis*

1998 Las Vegas, *Bacillus anthracis*

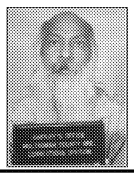
2001 Unknown, Trenton, NJ 2001, letters containing anthrax spores

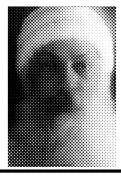
Larry Wayne Harris

FOI

B-terrorism (organisations)

- 1972, Chicago
  - **Order of the Rising Sun – 35 kg *Salmonella typhi* cultures – plans to poison municipal water supply**
- 1984, The Dalles, Oregon
  - **Followers of Bhagwan Shree Rajneesh cause salmonella infection in about 800 residents**





FOI

C-criminality (individuals)

1948 Cyanide, Japan, 12 killed during bank robbery

1982 Cyanide in pain-relieving tablets, Chicago, 7 dead, perpetrator and motive remain unknown

1993 A pesticide is poured into the coffee machine, Malaysia, 8 die, perpetrator and motive remain unknown

2002 Rat poison, China, 38 killed, customers of fast-food rival


Krogägare hämnades – 38 döda

FOI

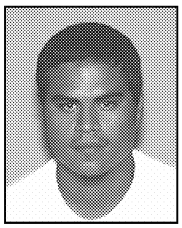
Nuclear terrorism - background

- Fear that nuclear experts can be recruited for money or ideological reasons
- Both Aum Shinrikyo and al Qaeda have tried to acquire nuclear explosives and fissile material, but it is unlikely that they have succeeded
- Enormous costs to develop and manufacture a nuclear explosive and you must also conceal what you are doing

FOI

R-terrorism precursor?

- 2002, Chicago
  - **On 8 May, Padilla was arrested after flying into Chicago airport from Pakistan, for what the US authorities say was a reconnaissance mission to set up and explode a 'dirty bomb' in the US**



José Padilla (also known as Abdullah al-Muhajir)

FOI

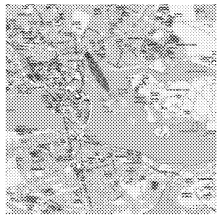
Dispersal of Radioactive Material

- **Most likely scenario, but far less spectacular than detonating an improvised nuclear device**
  - **Radiological Dispersal Device (RDD)**
  - **Explosives and Nuclear Waste or Radiation Source**

Cancer Treatment Facility

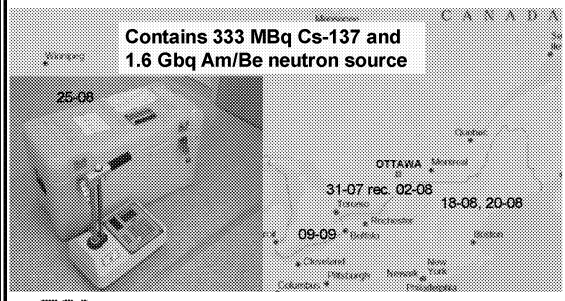
+ Explosives

= Radiological Dispersal Device



FOI

What is happening in Canada? or The Serial Gauge Thief



FOI

Radiological/Nuclear Terrorism Scenarios

In order of probability:

1. Dispersion of radioactive material
2. The Bluff – small amounts of fissile material and expertise
3. Attack against or sabotage of reactor
4. Detonation of Improvised Nuclear Device

FOI

SIBCRA Working Group

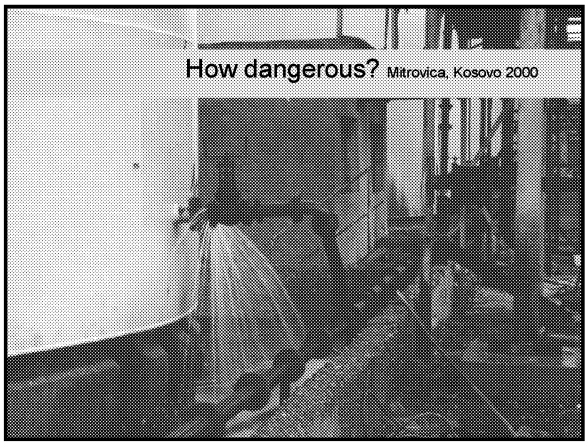
- Sampling and Identification of Biological, Chemical, and Radiological Agents
- NATO working group open for PfP-countries
- Chairman: Slawomir Neffe, PL
- Secretary: Osman Tasman, NATO HQ
- Participating PfP-countries: Austria, Bulgaria, Finland, Romania, Slovakia, Slovenia, Sweden, and Switzerland

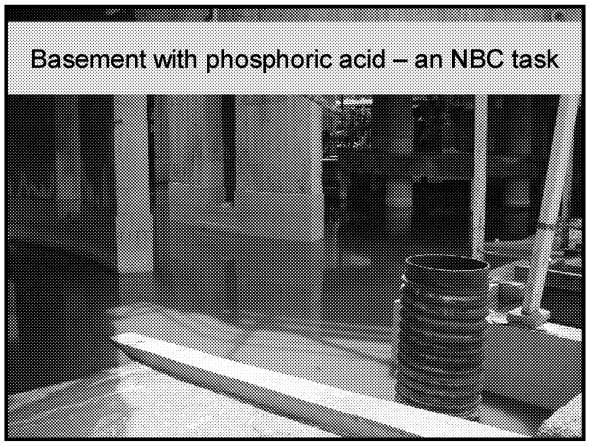
FOI

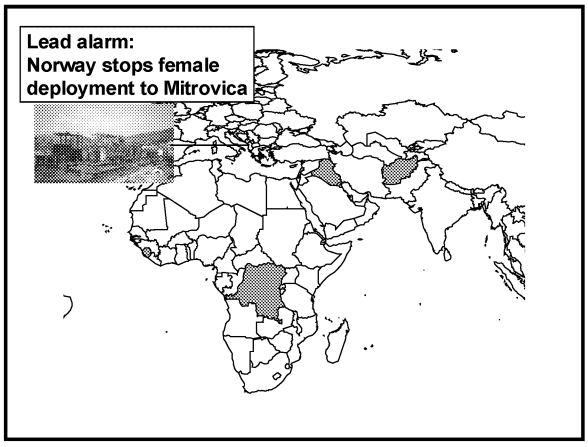
Some Personal Conclusions

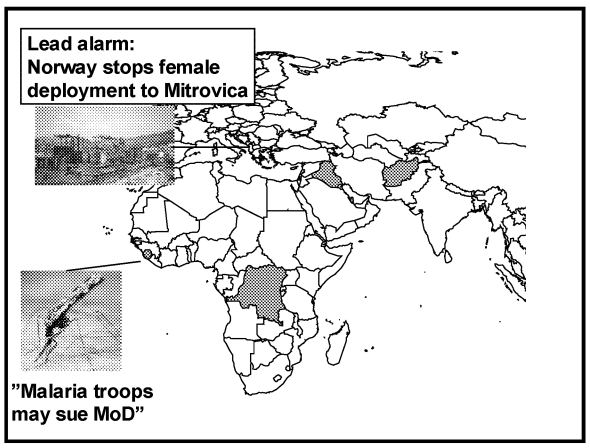
- There is no clear definition of low level incidents
- Few, and far between, low level attacks
- Consequences are often exaggerated by media
- So far, low level attacks have claimed relatively few lives compared to the possibilities
- Since 911, the perception of risks associated with large-scale WMD-like terrorism has grown immensely among civil and military planners

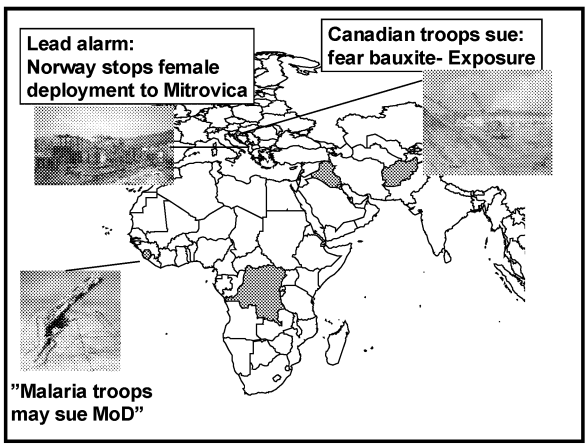
FOI

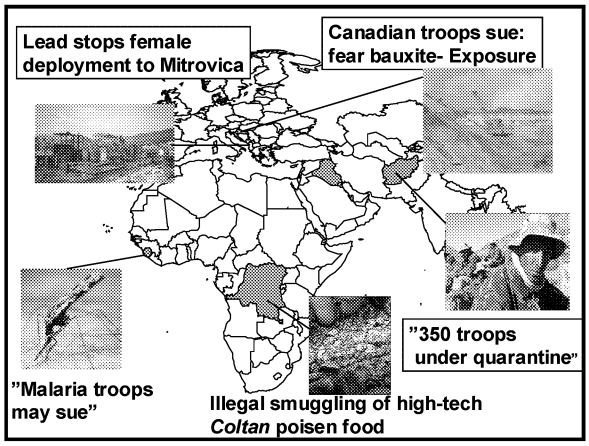

How dangerous? Mitrovica, Kosovo 2000


Basement with phosphoric acid – an NBC task


Lead alarm:
Norway stops female
deployment to Mitrovica


Lead alarm:
Norway stops female
deployment to Mitrovica
"Malaria troops
may sue MoD"


Lead alarm:
Norway stops female
deployment to Mitrovica
Canadian troops sue:
fear bauxite- Exposure
"Malaria troops
may sue MoD"

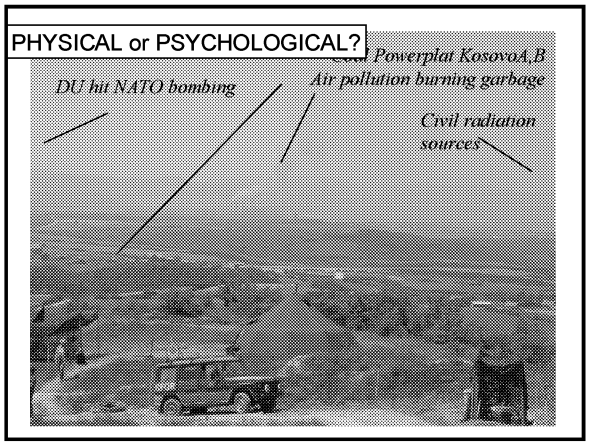


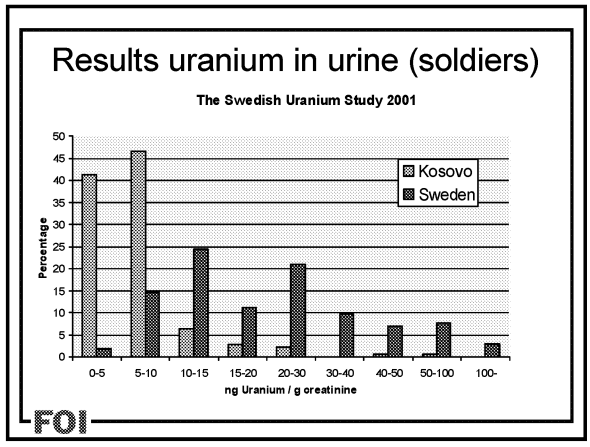
Environmental and health risks in international operations

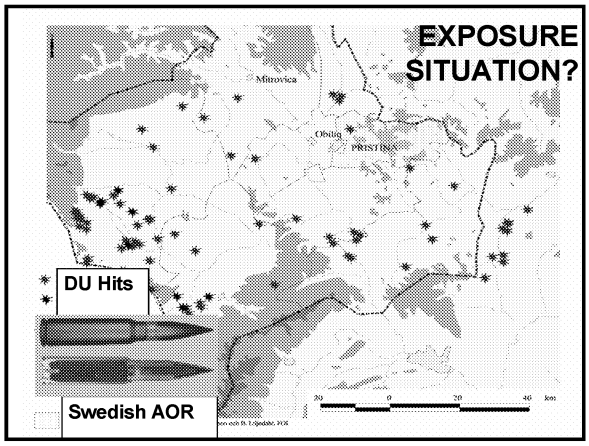
Outcome of the civilian-military Swedish project "Case study Kosovo"

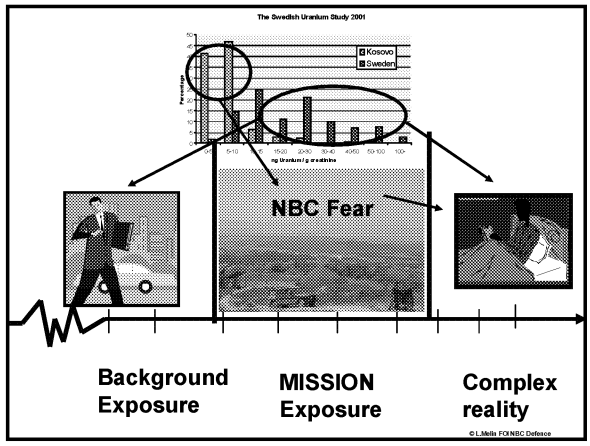
- Swedish NBC/EIHH[1]- experiences, focus Kosovo
- Key problems
- Tools
  - The Platform
  - GIS
- Conclusion

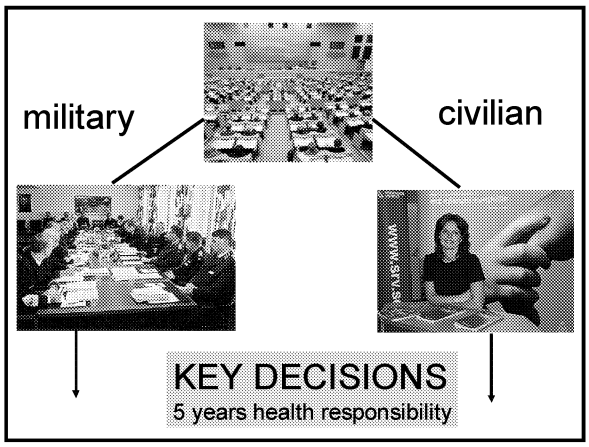
[1]EIHH *Environmental Industrial Health Hazards*

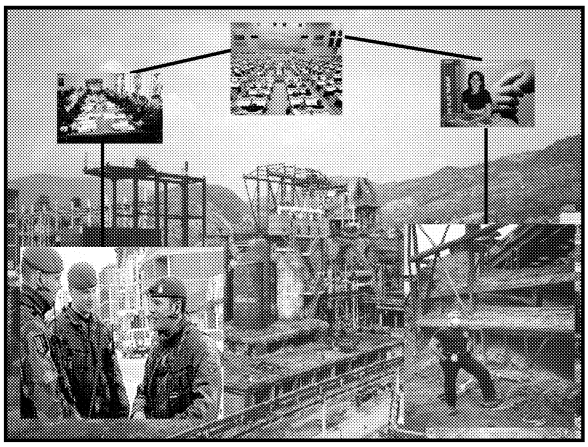






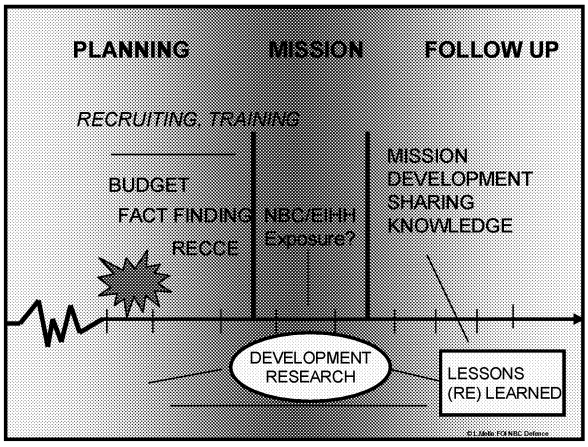


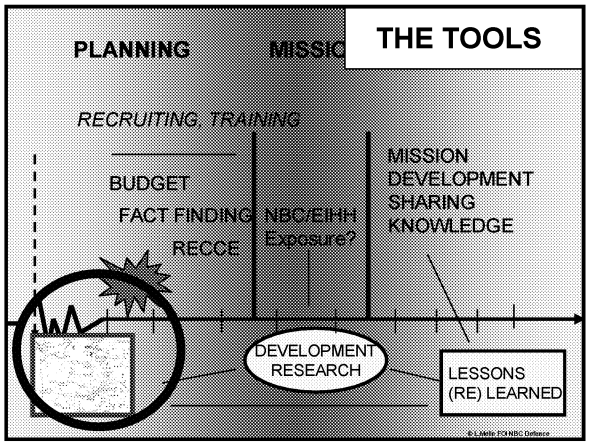


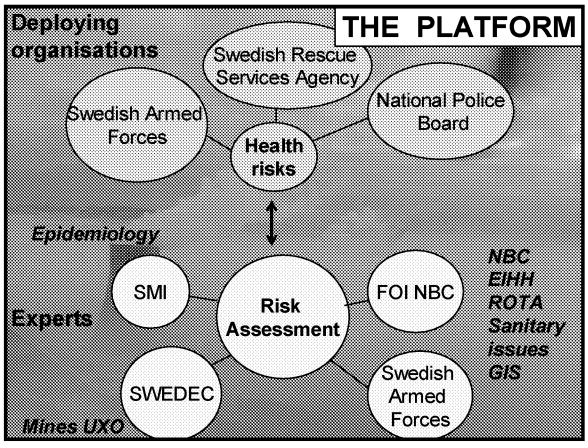


Key problems…

- Who is responsible for updated NBC/EIHH risk assessment and implementation?
- Fast Key descisions weak in NBC / EIHH
- Fear and facts – risk communication
- Lack of Exposure Monitoring personnel and environment
  - background / mission / background -



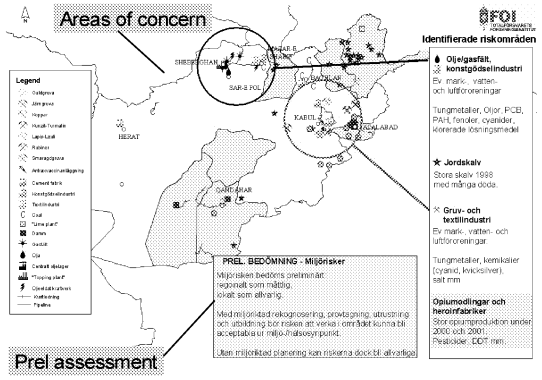




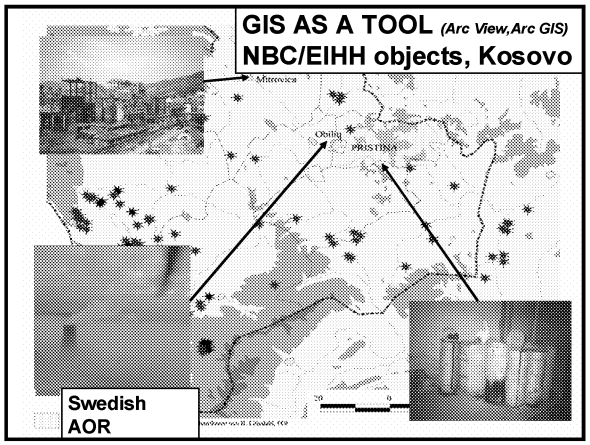
MISSION AREA – PLATFORM ASSESSMENT

2003-05-01 Assessment	Risk estimate	Assessed by	Data frequency	Reliability
ROTA		FOI	+++	A
Soil pollution		FOI	++	C
Water pollution		FOI	++	C
Air pollution		FOI	+++	A
Nuclear, radiological		FOI	++	C
Biological warfare		FOI	+	C
Chemical warfare		FOI	+	C
NBC Terrorism		FOI	+	F
Mines and UXO		SWEDEC	+	B
Gastrointestinal infections (oral vaccine)		SMI	++	A
Malaria (with profylaxis)		SMI	++	A

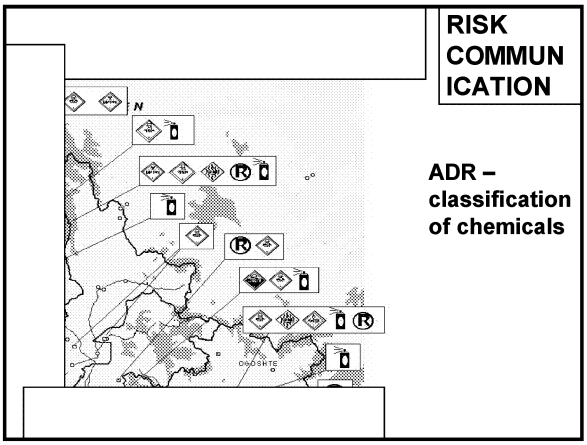
NBC/EIHH in KEY DESCISIONS



GIS AS A TOOL *(Arc View,Arc GIS)* NBC/EIHH objects, Kosovo

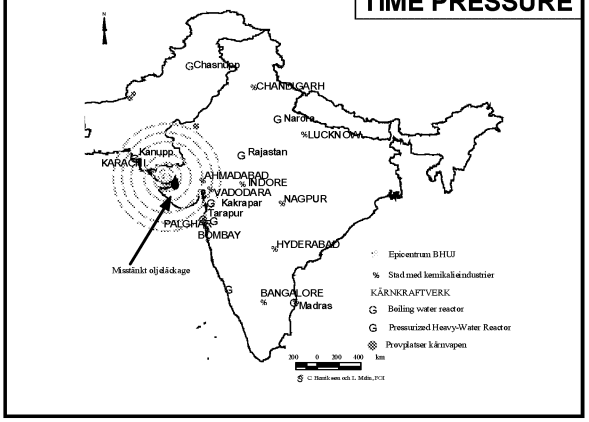


RISK COMMUNICATION



ADR – classification of chemicals

TIME PRESSURE



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Division of NBC Defence, Swedish Defence Research Agency (FOI)

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- *Swedish Armed Forces*
- *Swedish Institute for Infectious Disease Control*
- *National NBC-defence Centre, Sweden*
- *Swedish International Development Cooperation Agency*
- *Personnel at UNMIK, Kosovo 2000-2003*
- *NBC officers and GIS personnel at KFOR HQ, Kosovo 2000-2003*
- *Lt(N) C. Knowlton, CEA J3 Engr 4-2 (EIHH/PHC PD) CANADA*

Surveillance and Field epidemiological team

Anders Tegnell
SMI

SMITTSKYDDSINSTITUTET

Centre for Microbiological Preparedness (KCB)

P4/3-laboratories
B-MEG
Diagnostics VHF
Molecular virology VHF
Epidemiological database (EpiExpert)

Central field epidemiology team

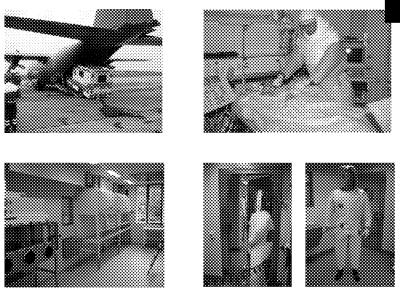
High Security Isolation Unit US
Transport of highly contagious patients

SMITTSKYDDSINSTITUTET

Four main areas of work

1. Diagnostics
2. **Preparedness**
3. Research
4. High-isolation patient care

SMITTSKYDDSINSTITUTET



SMITTSKYDDSINSTITUTET

Preparedness

SMITTSKYDDSINSTITUTET

2.2 National Field Epidemiology Team

- Activities
  - Major national outbreaks
  - International outbreaks
  - Support Swedish international activities
  - Bio-terrorism
- Areas of expertise
  - Outbreak management
  - Clinical infectious diseases
  - Environmental health

SMITTSKYDDSINSTITUTET

- Group of experts with diverse competencies on 24/7 call
- Ready to leave within 24-48 hrs.
- Recruited and trained

CFG Central Fältepidemiologisk Grupp

Ett samarbetsprojekt mellan
Försvarsmakten
Räddningsverket
Smittskyddsinstitutet
Socialstyrelsen
Totalförsvarets Forskningsinstitut

A joint project between Swedish Defence, Rescue Services, Infectious Control Center, National Board of Health Defence Research Agency

Background

- Small resources at local level for outbreak management
- Need to coordinate Swedish resources in the international setting
- New threats such as deliberate releases and new diseases will need specialised resources

Description of the team

12 MD (infectious diseases / public health, surger

9 veterinarians

6 environmental health specialists
- international experience
- language skills
- tropical medicine
- administrative knowledge
- scientific knowledge
- experience of mass media

Development

Spring 02	Recruitment
Fall 02	Training Operating procedures etc
Spring 03	Equipment and continued training And first mission to Hanoi

CFG Central Fältepidemiologisk Grupp

Ett samarbetsprojekt mellan
Försvarsmakten
Räddningsverket
Smittskyddsinstitutet
Socialstyrelsen
Totalförsvarets Forskningsinstitut

I Domestic activities

II International activities (with others)

III - " - (alone)

New approaches needed for protection

SMITTSKYDDSINSTITUTET

Management of an event

- Early recognition of an unusual event
- Quick diagnostics
- Preparedness for countermeasures

SMITTSKYDDSINSTITUTET

Surveillance for bio terror events

SMITTSKYDDSINSTITUTET

Definition

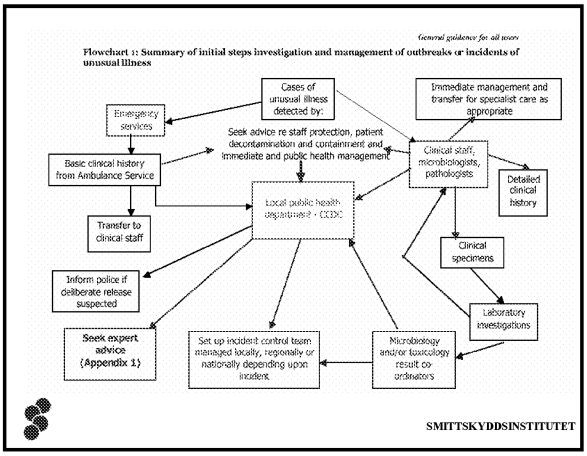
- Surveillance
  ongoing scrutiny, generally using methods distinguished by their practicability, uniformity, and frequently their rapidity, rather than by complete accuracy. Its main purpose is to detect changes in trend or distribution in order to initiate investigative or control measures.

SMITTSKYDDSINSTITUTET

PURPOSE

- Discover a covert release
- Define the extent of an overt release
- Initiate early treatment of exposed
- Stop transmission of disease

SMITTSKYDDSINSTITUTET



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Classical surveillance

- Specified diseases
- When case is diagnosed
- From clinician and/or laboratory

EU mechanism for surveillance data exchange

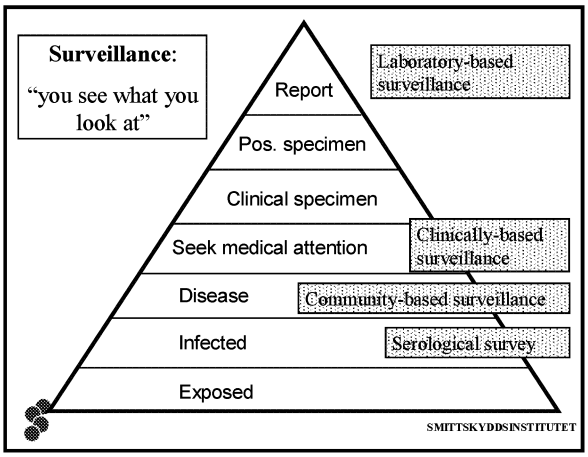
- Disease-specific networks
- Early warning and response
- RAS

WHO

- International Health Regulations
- GOARN
- Euphin

Problems with using existing system

- Only finds given diseases
- Often very late
- Not very sensitive



Potential Bio terrorism Agents - CDC Classification

- **Category A**: High Priority Agents - Easily Disseminated or transmitted, high mortality, may cause public panic or social disruption, special action needed in response
  - Smallpox, Anthrax, Plague, Botulism, Tularaemia, Filoviruses and Hemorrhagic fevers, Arenaviruses
- **Category B**: - Relatively easy to disseminate, moderate morbidity and low mortality, and can slip though current CDC diagnosis and disease surveillance capacity
  - Q Fever, Brucella, Glanders, Alphaviruses, equine encephalomyelitis, Ricin, epsilon toxin, Staphylococcal Enterotoxin B
  - Food and Water-borne agents: Salmonella, Shigella, E-Coli, Cholera, cryptosporidium parvum
- **Category C**: Emerging pathogens that could be engineered for mass dissemination
  - Nipah virus, hantaviruses, tickborne fevers/viruses, yellow fever, multidrug resistant mycobaterium tuberculosis

AMA

Anthrax

Botulism

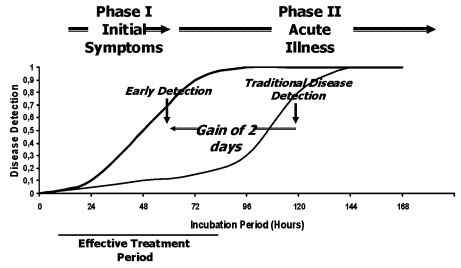
Smallpox

Tularemia

Plague

http://pubs.ama-assn.org/bioterr.html

Need for Early Detection*



Who finds new outbreaks

- Clinician
  - Monkeypox
  - Anthrax
  - HIV
  - Etc
- Syndromic surveillance systems
  - Recent electric cut in US

Conclusion

- National surveillance will not provide the whole answer to early detection
- Remains big problem of differentiating natural diasease from deliberate releases
- Others method are neeeded

Surveillance as a tool to Stop transmission (for diseases with human to human transmission

- Contact tracing
- Early case finding

Smallpox and SARS

- The basic strategy was to quickly find cases and all possible contacts and isolate them from more possible susceptible persons
- Eradicated the disease

Syndromic surveillance

- Looks for a given set of symptoms
- Quicker
- From clinician
- Sensitive but not very specific

Conclusion

- Experince indicate that it can be an effective tool to stall an epidemic if starts early and is comprehensive
- Has legal implications (in the civilian setting) since
  - Implies that right of individuals might be infringed
  - Implies restriction of movements for the population

What could tell us an event has started

Possible indicators of deliberate release

A rapidly increasing number of diagnosed cases of a specific disease in a normally healthy population.
An epidemic curve that rises and falls during a short time period.
Lower attack rates among people who had been indoors, especially in areas with filtered air or closed ventilation systems, compared with people who had been outdoors.
Clusters of patients arriving who live in a single area.
Clusters of patients arriving who work in a single area.
Clusters of patients arriving from a single population group.
Large numbers of rapidly fatal cases
Large numbers of fatalities from a specific disease
An increase in the usage of a particular prescription drug
Number of civilian patients rise abnormally
Number of total visits rise abnormally

Possible Diagnosis that indicates deliberate release

Anthrax - Pulmonary
Anthrax - Cutaneous
Anthrax - Gastrointestinal
Encephalitis
Meningitis (enterovirus)
Bubonic plague
Small pox
Yellow fever
Malaria
Active Tuberculosis
Bactierial Meningitis
Dengue fever
Typhoid fever
Cholera
Syndromes caused by any of the notifiable diseases
An endemic disease rapidly emerging at an uncharacteristic time or in an unusual pattern.
Any patient presenting with a disease that is relatively uncommon and has bioterrorism potential, e.g. pulmonary anthrax, tularaemia, or plague.
Diagnosis of patients with a positive tuberculosis test

Syndrome that could indicate deliberate release

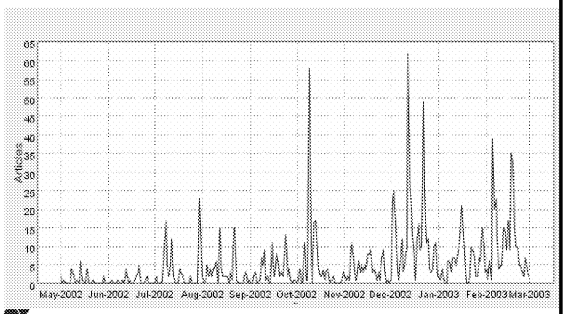
Unexplained fever, rash
Symptoms of Fever > 100.5F- Sore throat- Cough productive- Headache- Cough non-productive
Symptoms of- Fever- Malaise, lack of health- Weakness, lack of strength- Neck pain/spasm- Coma- Double vision- Headache- Loss of coordination- Mental status changes
Unexplained severe acute respiratory distress syndrome (ARDS)- severe or fatal cases with fever (temperature >38.3C) in humans, age >5 and < 65- Signs < 1 week duration- Acute respiratory distress or bilateral pulmonary infiltrates within 1 week following hospitalisation- Noncardiogenic- No immediately identifiable specific cause
Gastrointestinal symptoms- Diarrhoea- Nausea- Vomiting
Syndromes caused by upper respiratory illness- Congestion- Cough, non-productive- Cough, productive- Nasal discharge- Sore throat
Syndromes caused by lower respiratory illness - Breathing difficulty- Chest tight- Cough, non-productive- Cough productive- Shortness of breath- Strider- Wheezing
Symptoms of - Chills- Fever - Sweats

OTHER INFORMATION SOURCES TO DISCOVER EVENTS EARLY

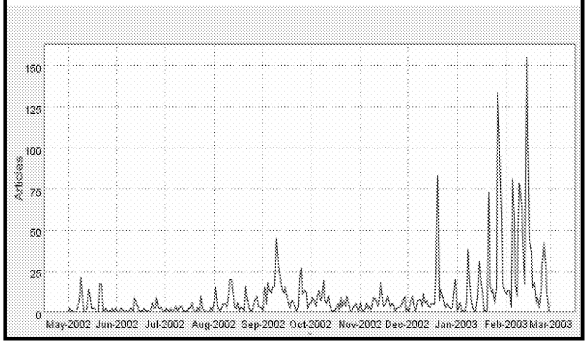
- Promed
- Media

Media surveillance

Smallpox



Anthrax

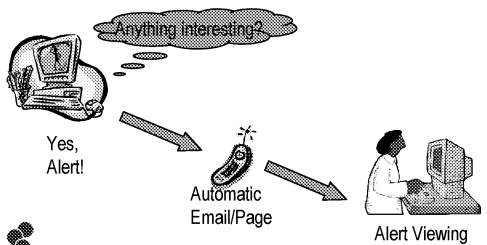


Alternative data

- Pharmaceutical sales
- Calls to health information
- Sick leave
- Visits to doctors
- Others

Data Mining

- Sends out “Alerts” based on possible outbreaks



Other sources of info

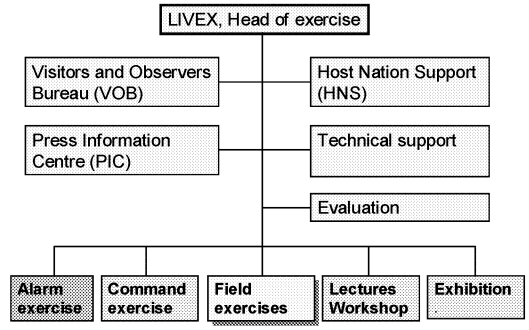
- Detectors in strategic locations???
  - Sensitivity/specificity
  - What locations
  - Implies airborne
    - Letters
    - food

CHALLENGES TO IMPROVE OUR POSSIBILITEIS TO RECOGNISE EARLY INDICATIONS

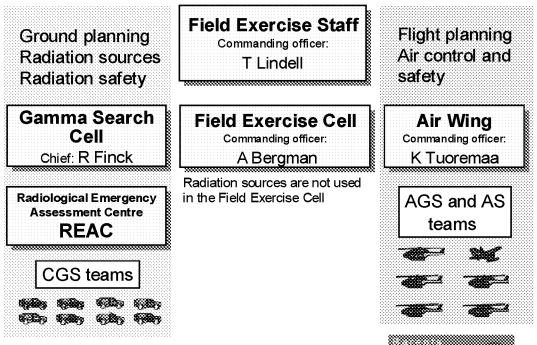
- Need for real-time data collection systems
- Data integrity, privacy, and security
- Daily monitoring activities vs. incident management
- Management of complex information

SMITTSKYDDSINSTITUTET

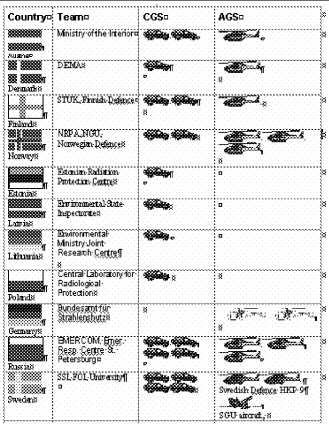
Barents Rescue 2001, organisation



Field Exercise Organisation

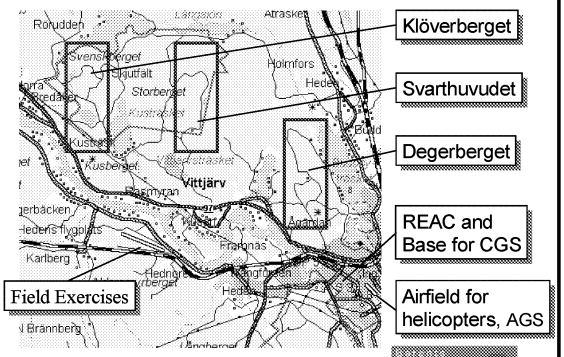


Participation in the Gamma Search Cell



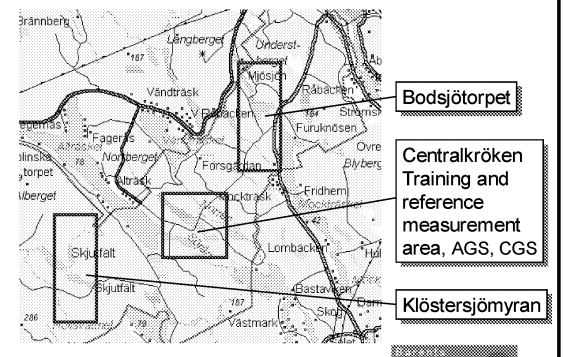
11 countries
19 car teams
11 helicopters
1 fixed wing aircraft

Search areas AGS+CGS, Boden NW



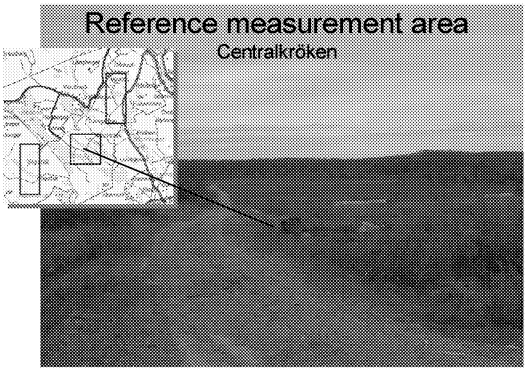
The search area

Search areas AGS+CGS, Boden SW

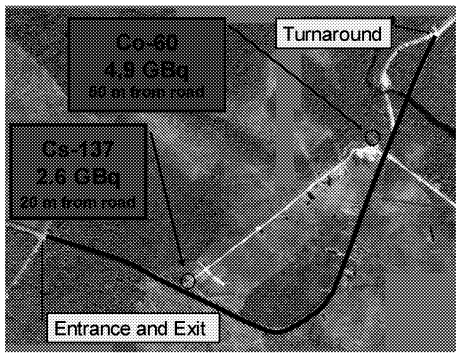


Reference measurement area

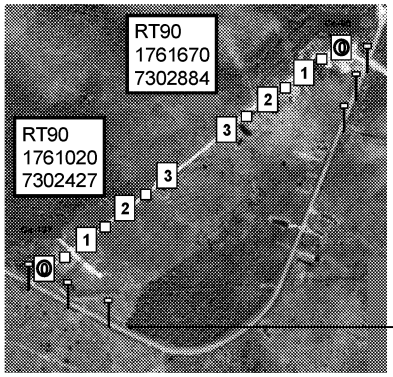
Centralkröken



Reference Area R2



Reference Area R2, Helicopter training Area A6

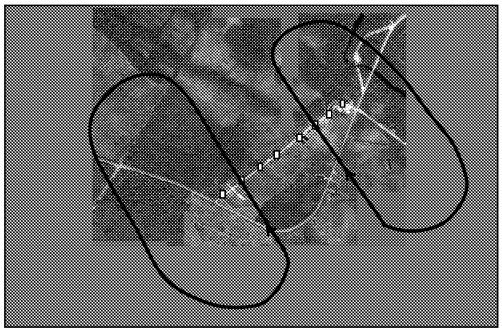


Signs 1, 2, 3 mark the distance 100 m, 200 m and 300 m from the source. Small squares mark 50 m intervals.

Do not enter the source area

Signs along the road mark the distance to the source

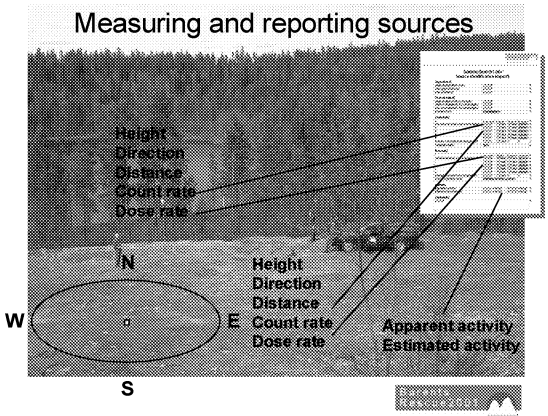
Suggested flight paths, Area A6



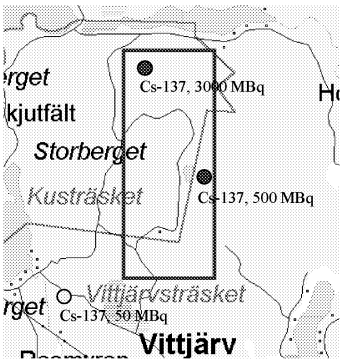
Radiation safety

- Sources were guarded around the clock
- The firing rages used for AGS and CGS were restricted areas. Entry by the public was prohibited by law.
- Entry was permitted only at certain gates. Entry and exit was reported to the Ground Control in REAC
- Teams were recommended to bring mobile phones. The only service provider in the area was Telia
- For some areas radio communication was needed. Radios were provided for teams entering these areas.
- All teams were provided with TL-dosimeters
- Teams without electronic dosimeters were provided with a dose rate alarm instrument. The alarm level was set to 5 μSv/h.

Measuring and reporting sources

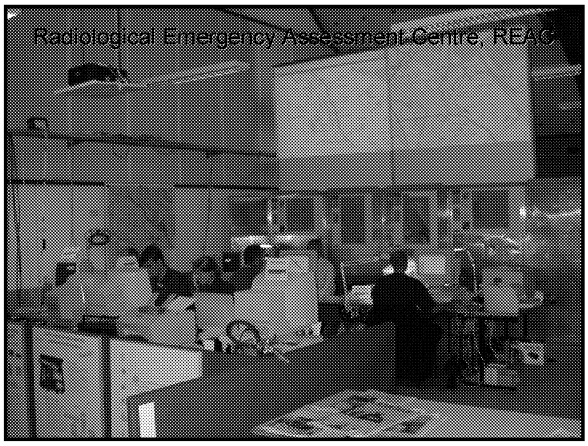


Presentation of results, point sources



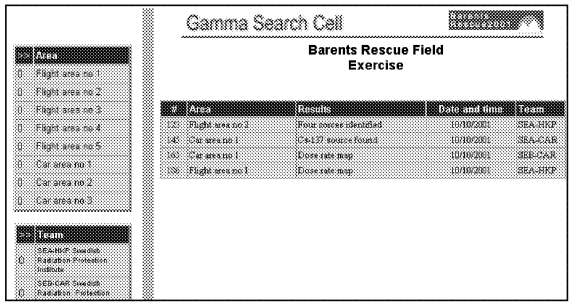
Example:

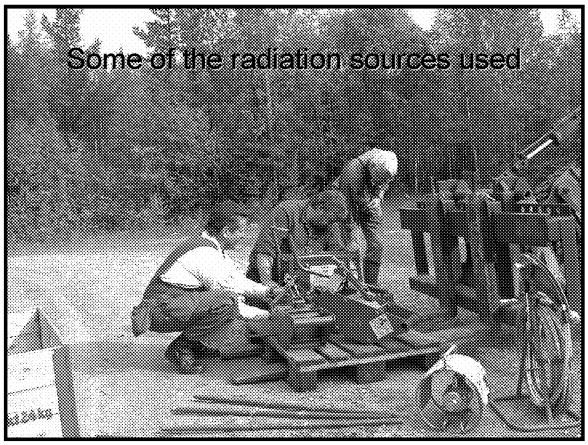
Team SEB
3 sources located
up to 2001-09-18

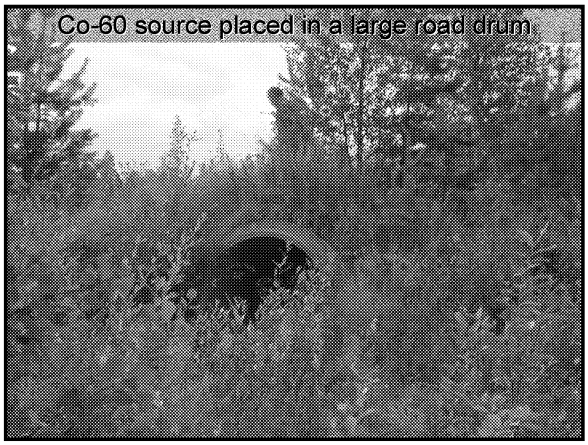


Web presentation

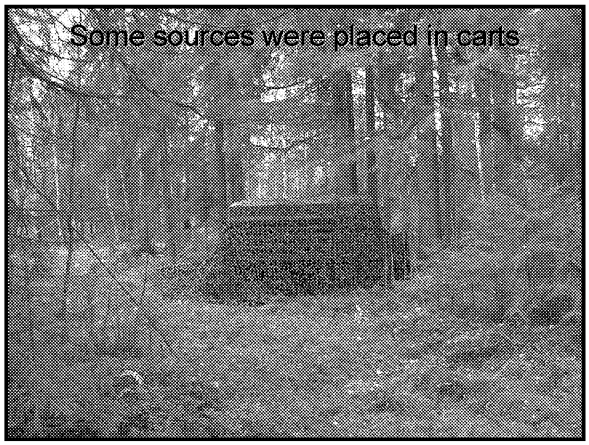
Password protected, Organisations will be separated

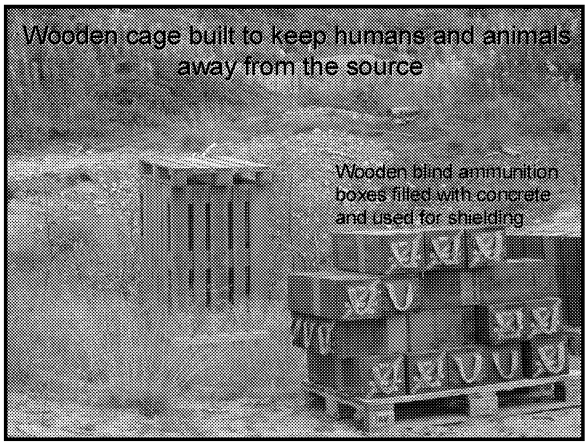


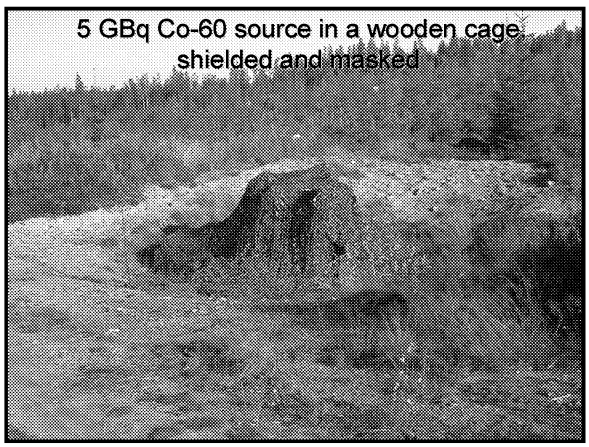


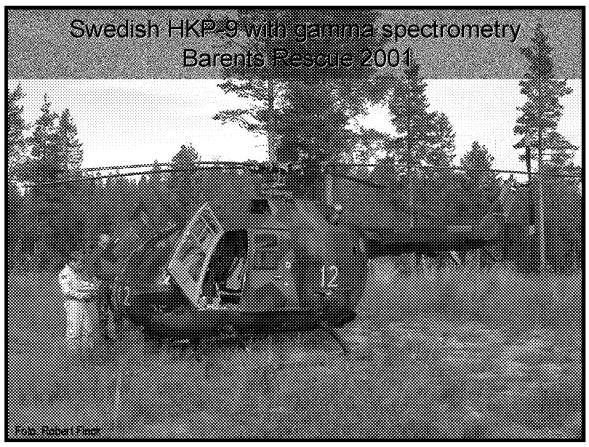


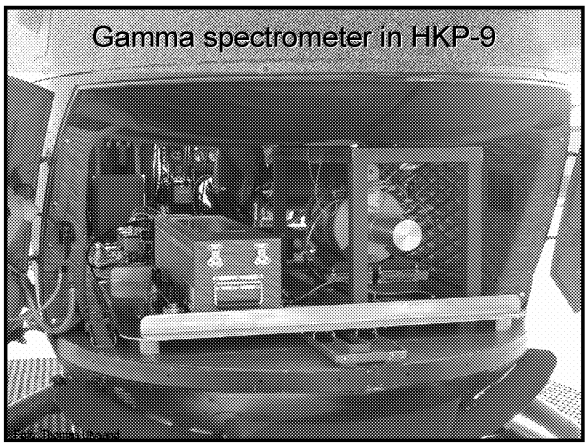

Opened Mo-99 - Tc-99m generator on the attic of a deserted farmstead
Warning
Warning


Some sources were placed in carts

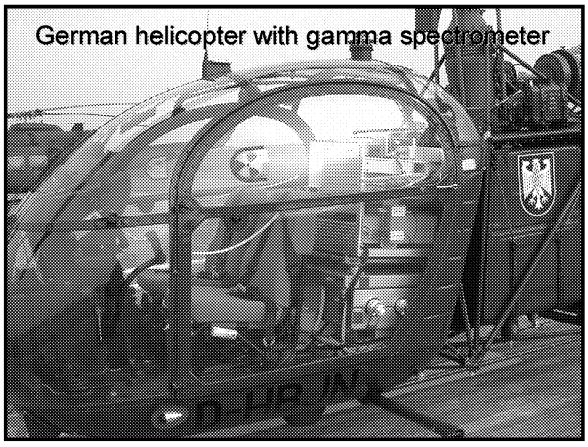

Wooden cage built to keep humans and animals away from the source
Wooden blind ammunition boxes filled with concrete and used for shielding


5 GBq Co-60 source in a wooden cage, shielded and masked

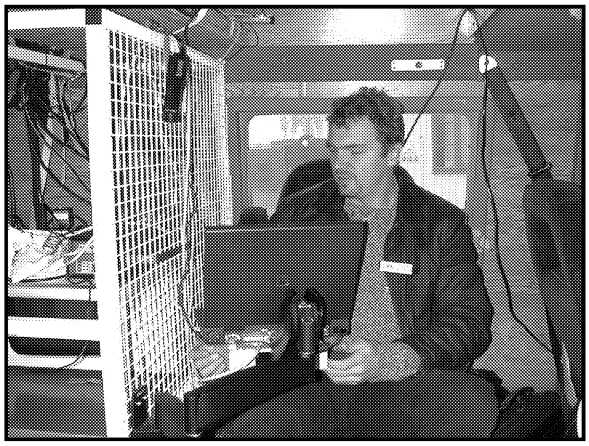

Swedish HKP-9 with gamma spectrometry
Barents Rescue 2001


Gamma spectrometer in HKP-9

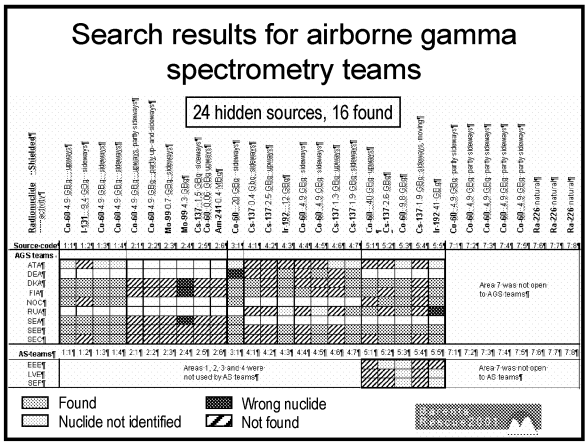

The Finnish gamma spectrometry
team using a Swedish helicopter


German helicopter with gamma spectrometer

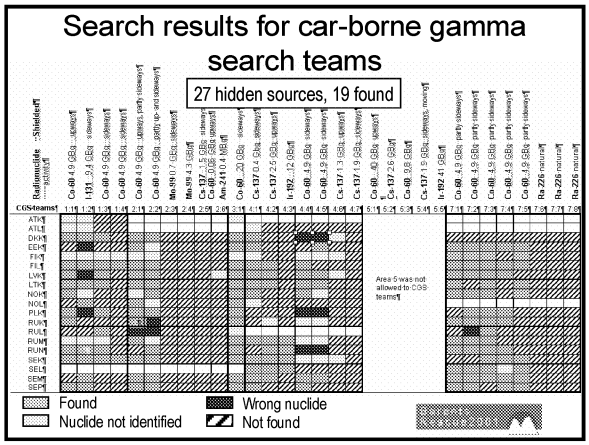

The Swedish search car



Search results for airborne gamma spectrometry teams



Search results for car-borne gamma search teams



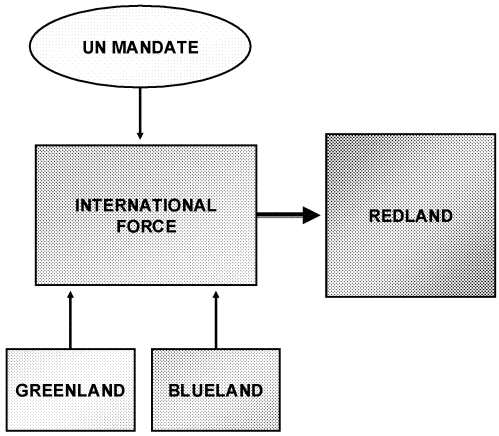
Conclusions

- Teams found i valuable to test their equipment under field conditions
- Civil - military co-operation worked very well
- About half of the sources were found
- Search methods can be improved
- Spectrometry is often needed to identify a source
- Success depends on a number of things (activity, shielding, distance and sheer luck)

LEGAL ASPECTS ON INTERNATIONAL PEACEKEEPING OPERATIONS

Stefan Ryding-Berg, Chief Legal Adviser of the Swedish Armed Forces

* Mandate
* Chapter VI Charter of the United Nations
* Chapter VII Charter of the United Nations
* Consent of the Territorial State
* Self-defence
* Military/Police tasks
* Rules of Engagement (ROE)



Chapter VI

(Article 37, UN Charter)

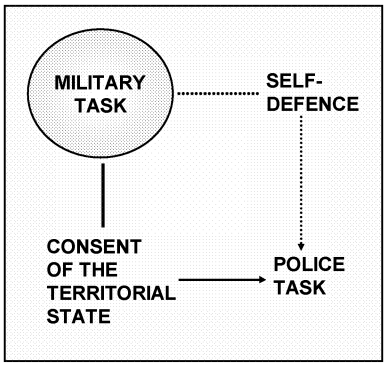
1. Should the parties to a dispute of the nature referred to in Article 33 fail to settle it by the means indicated in that Article, they shall refer it to the Security Council.
2. If the Security Council deems that the continuance of the dispute is in fact likely to endanger the maintenance of international peace and security, it shall decide whether to take action under Article 36 or to recommend such terms of settlement as it may consider appropriate.

SELF-DEFENCE

(Article 51, UN Charter)

Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.

Chapter VI

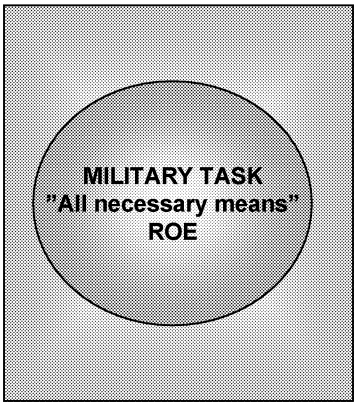


Chapter VII

(Article 42, UN Charter)

Should the Security Council consider that measures provided for in Article 41 would be inadequate or have proved to be inadequate, it may take such action by air, sea, or land forces as may be necessary to maintain or restore international peace and security. Such action may include demonstrations, blockade, and other operations by air, sea, or land forces of Members of the United Nations.

Chapter VII



RULES OF ENGAGEMENT (ROE)

* Directives to the military forces on how force may be used for mission accomplishment
* Reflects a compromise between military and political concerns in order to ensure that the military forces operate in accordance with the political goals set
* Issued as prohibitions they are orders not to take the designated action
* Issued as permissions they define the limits of the force that may be used to achieve an objective
* Any use of force must be necessary (no alternative action available) and proportional (limited to the degree, intensity and duration needed to achieve the assigned objective)
* The right to use force may be further limited by national law
* Does not affect the right to self-defence under national law

Presentation

SWEDISH EAPC SEMINAR
STOCKHOLM
September 18 -19
2003

in 2003

SWEDISH CHEMICAL SUPPORT TEAM

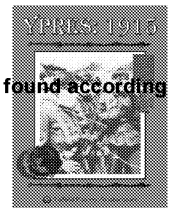
A SURVEY OF THE POSSIBLE OFFER TO CWC

1

Swedish Chemical Support Team

Article X in Chemical Weapons Convention

Swedish offer:



- **Contribution to the voluntary found according to § 7a**
- **Assistance according to § 7c**
  - **Experts**
  - **Equipment**
  - **Rescue Services in CW environment**

2

Swedish Chemical Support Team

Swedish Rescue Services Agency

- **Central organisation for administration, management and co-operation of rescue activities.**
- **The Agency has a supervisory role under the Swedish Defence Department.**
- **International assignment for different UN-organisations, OCHA, UNICEF, UNHCR, WFP ....**

3

Swedish Chemical Support Team

SRSAs GOVERNMENTAL ASSIGNMENT

- **CREATE!**
- **DEVELOP!**
- **ORGANISE!**
- **MAINTAIN!**

CHEMICAL SUPPORT TEAMs

4

Swedish Chemical Support Team

GENERAL IDEA FOR THE TEAM

- **Support OPCW on the scene of an operation**
- **Civilian protection equipment**
- **Detection equipment**
- **Decontamination equipment**
- **Medical antidotes and prophylactics**
- **High preparedness**
- **Rapid reaction**
- **Special decision from the government**

5

Swedish Chemical Support Team

GENERAL ASSUMPTIONS FOR THE TEAM

- **Civilian professional rescue responders**
- **High safety and security for the team**
- **Personal protection equipment**
- **Civilian protection equipment**
- **Plans and preparations for the team**
- **Standard Operating Procedures**
- **Self supporting for 14 days**

6

Swedish Chemical Support Team

ORGANISATION

TEAM STAFF	LOGISTIC UNIT
10	5

RESCUE UNIT	RESCUE UNIT	SAFETY UNIT
8	8	9

7

Swedish Chemical Support Team

PERSONNEL

• Teamleader & Deputy	2
• Chief of Staff	1
• Staff Officer (Log-Info-Liaison)	3 (Eng)
• Communicator/driver	2
• Interpreter	1
• Team Advisor	1
• Quartermaster	1
• Technician/Cook	2
• Rescue Officer (Group comm..)	5 (FM, Ff)
• Rescue Responder	12 (Fm, Chemdiver)
• Med. Doctor, Med. Nurse	1+3
• CW & BW Specialist	2
• E&D Safety Specialist	1
• Security - Safety Specialist	1
	40

8

Swedish Chemical Support Team

PREPAREDNESS

Timetable in the state of alert

In <5 hours	-	Reconnaissance team (3-4)
In 12 hours	-	Support Team

Excluding travel time (land, sea or air)

9

Swedish Chemical Support Team

TASKS FOR THE TEAM

General

- Support with protection for families
- Individual Protective Equipment for handlers
- Risk assessment
- Evacuation planning and support
- Rescue support - planning, training
- Support with Detection- and Warning systems
- Logistic support - planning
- Team safety system

10

Swedish Chemical Support Team

Civilian protection

Package for 5000 persons

Hand-out with information and control

11

Swedish Chemical Support Team

Equipment for personnel from RSP

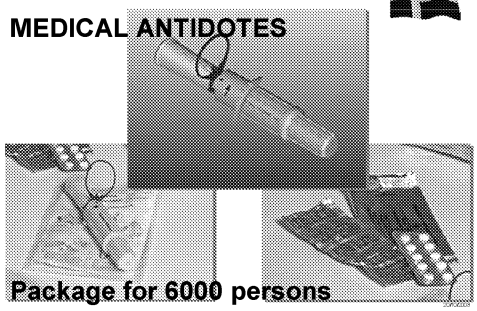
For 500 handlers from RSP

Training of personnel from RSP

14

Swedish Chemical Support Team

MEDICAL ANTIDOTES



Package for 6000 persons

13

Swedish Chemical Support Team

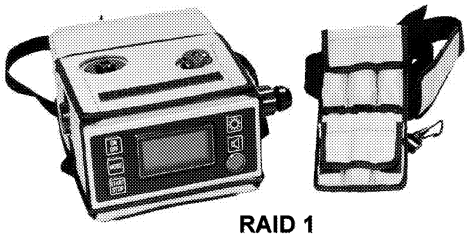
EQUIPMENT FOR THE TEAM

PROTECTION SYSTEM 2000

14

Swedish Chemical Support Team

Chemical Agent Warning Instrument

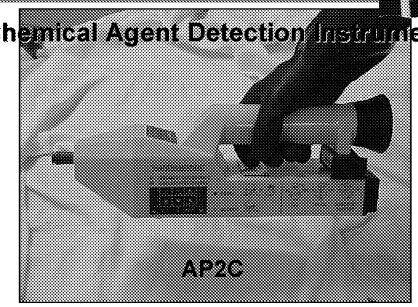


RAID 1

15

Swedish Chemical Support Team

Chemical Agent Detection Instrument

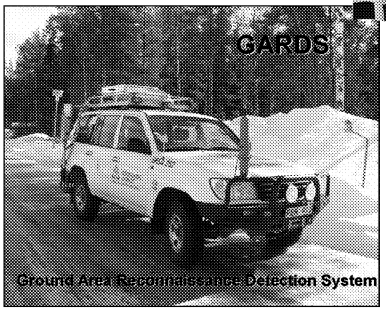


AP2C

16

Swedish Chemical Support Team

GARDS



Ground Area Reconnaissance Detection System

17

Swedish Chemical Support Team

GARDS
Monitoring ground contamination

All Terrain Vehicle 2

18

Swedish Chemical Support Team

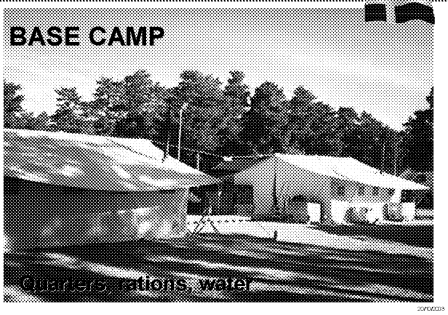
SUPPORT ON SCENE

Taking samples...

19

Swedish Chemical Support Team

BASE CAMP

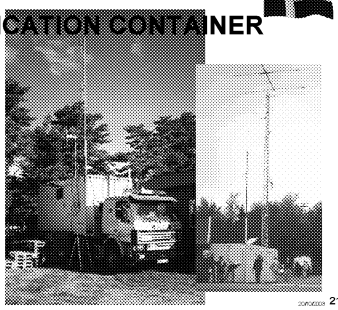


Quarters, rations, water

20

Swedish Chemical Support Team

COMMUNICATION CONTAINER



RÄDDNINGS VERKET

21

Swedish Chemical Support Team

ADDITIONAL EQUIPMENT

- RESCUE EQUIPMENT
- DECON EQUIPMENT
- CLEANING EQUIPMENT
- DECONTAMINATION EMULSION
- HOT AIR DECON CONTAINER

22

Swedish Chemical Support Team

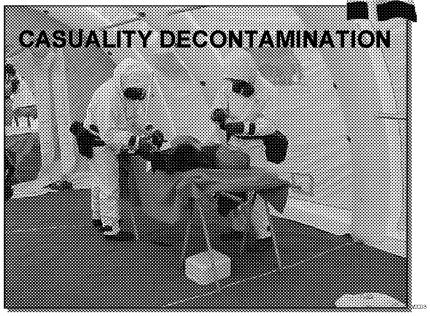
TASKS FOR THE TEAM

RESCUE SUPPORT

23

Swedish Chemical Support Team

CASUALITY DECONTAMINATION



24

Swedish Chemical Support Team

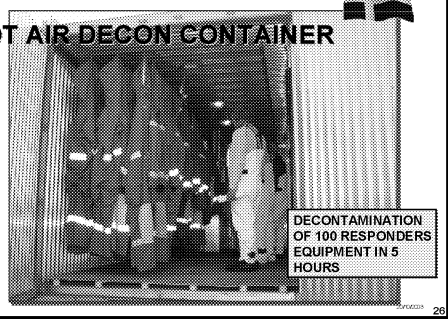
DECONTAMINATION OF EQUIPMENT

DECONTAMINATION EMULSION

25

Swedish Chemical Support Team

HOT AIR DECON CONTAINER



DECONTAMINATION OF 100 RESPONDERS EQUIPMENT IN 5 HOURS

26

Swedish Chemical Support Team

TEAM SAFETY

- MEDICAL SAFETY
- SAFE COMMUNICATIONS
- EVACUATION
- BODY PROTECTION

27

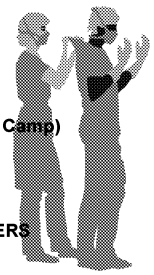
Swedish Chemical Support Team

MEDICAL SAFETY

RESOURCES IN THE TEAM

- FIELD MEDICAL SUPPORT
- INTENSIVE CARE UNIT (At Base Camp)
- MEDICINE, ANTIDOTES
- MEDICAL EQUIPMENT
- MEDICAL PERSONNEL
- VACCINATION OF TEAM MEMBERS

PREPARATIONS TO EVACUATE



28

Swedish Chemical Support Team

COMMUNICATIONS SAFETY

- EACH TEAM MEMBER
  - VHF – HAND RADIO
- STAFF TO UNITS
  - HF-RADIO 3 - 30 MHz
- STAFF
  - CAPSAT (INMARSAT C) SATELLITE FAX
  - SATELITE TELEPHONE

29

Swedish Chemical Support Team

MEDEVAC

- TEAM RESPONIBLE FOR PLANNING
- NO RESOURSES
- SRSA EVACUATION (SOS INTERNAT)
- OPCW ?
- UN ?
- OTHER ORGANISATIONS ?

30

Swedish Chemical Support Team

TRANSPORT TO SCENE OF OPERATIONS

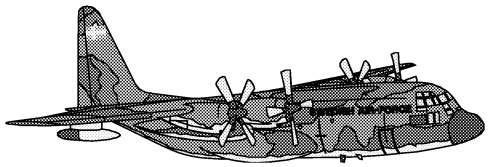
- AIR TRANSPORT
- ROAD TRANSPORT

31

Swedish Chemical Support Team

AIR TRANSPORT

PERSONNEL AND TEAM EQUIPMENT



32

Swedish Chemical Support Team

SWEDISH PROTECTIVE EQUIPMENT

5000 for families

=

5.5 TON and 33 m^3

Represents approx. 107 000 US $

33

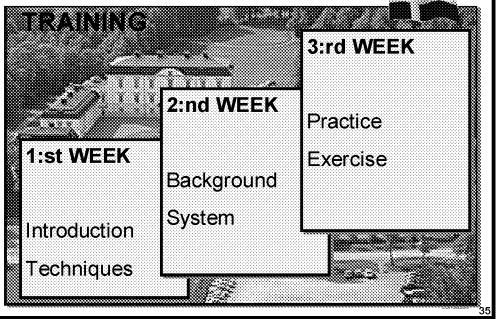
Swedish Chemical Support Team

ROAD TRANSPORT

34

Swedish Chemical Support Team

TRAINING



35

Swedish Chemical Support Team

TRAINING

- INTERNATIONAL COURSE
- NATIONAL COURSE

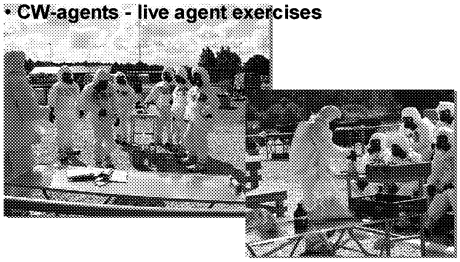
BASIC CW-TRAINING
3 WEEK COURSE

36

Swedish Chemical Support Team

TRAINING

- CW-agents - live agent exercises

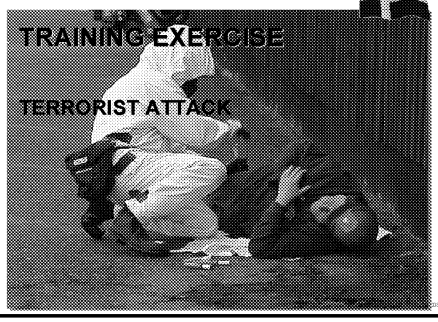


37

Swedish Chemical Support Team

TRAINING EXERCISE

TERRORIST ATTACK



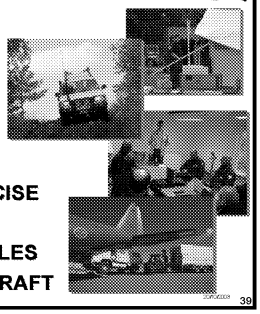
38

Swedish Chemical Support Team

TEAM EXERCISE

TRAINING ONE WEEK

- BASE CAMP
- TEAM BUILDING
- CONVOY TRAINING
- CHECKPOINT EXEXERCISE
- COMMUNICATIONS
- TRUCKS AND VEHICLES
- LOADING C130 AIRCRAFT



39

Thank You!

RÄDDNINGS VERKET

Swedish EAPC Seminar
on
Non-proliferation of WMD
New approaches needed for protection of forces and civilians
Stockholm, Sweden
18 – 19 September, 2003
Multinational Co-operation in Chemical, Biological, radiological and Nuclear (CBRN) Defence: NATO's multinational CBRN Defence Battalion.

Lt.Col. C. Wolterbeek
WMD Centre, Defence Policy and Planning, NATO HQ, Brussels

Introduction

The increasing proliferation of chemical, biological, radiological and nuclear (CBRN) weapons, also referred to as weapons of mass destruction (WMD), is posing an increasing political and military threat from countries of concern and non-state actors. Having the capabilities to deter and defend against this unconventional threat is vital. It was also noted that CBRN ROTA could have severe impact on deployed troops.

Policy Guidance and Capabilities Evaluation

Prague Capabilities Commitment:

- Including a new capabilities initiative focussing on four key operational areas one of which was defence against CBRN attacks (or ROTA).

Result of evaluation:

- NBC defence capabilities that all (national) forces must possess
- NBC defence capabilities that can be shared within the Alliance.

NBC Defence Capabilities that all Forces must Possess

- Medical countermeasures.
- Full individual physical protective equipment.
- Medical surveillance.
- Immediate decontamination equipment.
- Chemical weapon detectors.
- CBRN event (hazard warning and reporting) systems.

NBC Defence Capabilities that can be Shared within the Alliance

- Co-operate in the following areas:
- Operational and full decontamination.
- CBRN Survey and reconnaissance. Monitoring CBRN defence HQ elements.
- Point and standoff biological weapon (BW) detection and identification.

Recent NATO Initiatives

- NBC Defence Doctrine and Military Concept for Defence against WMD: an interim Bi-SC Biological Warfare Defence Concept was approved.
- Review of the NBC units as part of the NATO Response Force (NRF).
- Evaluated the prototypes of both a NBC Event Response Team (ERT), and Deployable NBC Laboratories and Sampling teams.

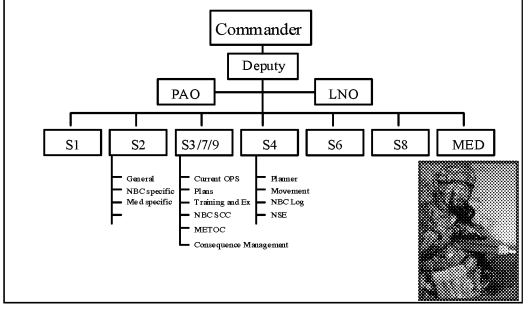
NATO Response Force (NRF)

- NRF: high readiness, joint, combined and mission tailored expeditionary force of limited size.
- Interoperability (the ability of forces to train exercise and operate effectively together).
- Possesses land, air and maritime component.
- Specialist Functions, such as the CBRN battalion, could be committed to the NRF.

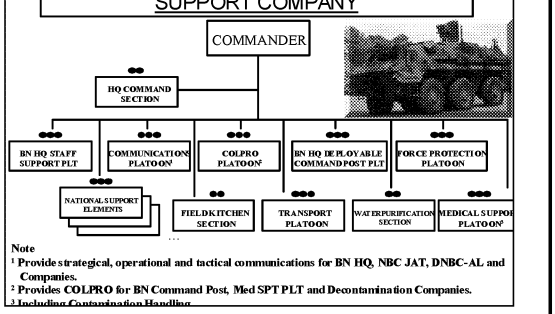
NATO Multinational CBRN Defence Battalion

- A battalion HQ and support capabilities.
- Combined Joint Assessment Team (CJAT).
- A deployable NBC Analytical Laboratory (DNBC-AL).
- An NBC reconnaissance company, including a meteorological support section.
- One light and one heavy decontamination company.
- Combat Support : strategic airlift and sealift capabilities; a live agent training facility.

MULTINATIONAL JOINT NBC RESPONSE BATTALION HQ

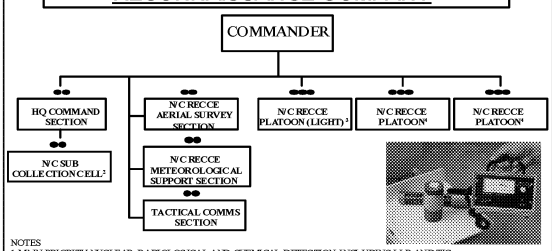


MULTINATIONAL JOINT NBC RESPONSE BATTALION HEADQUARTERS AND SUPPORT COMPANY



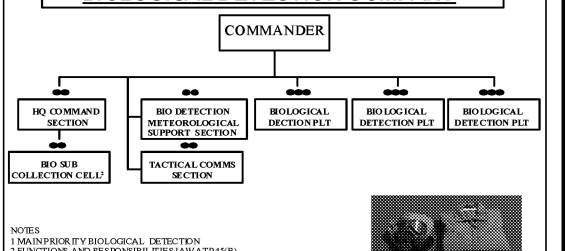
Note
[1] Provide strategical, operational and tactical communications for BN HQ, NBC JAT, DNBC-AL and Companies.
[2] Provides COLPRO for BN Command Post, Med SPT PLT and Decontamination Companies.
[3] Including Contamination Handling

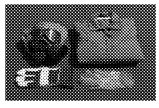
MULTINATIONAL CBRN DEFENCE BATTALION NBC (RAD/CHEM) RECONNAISSANCE COMPANY[1]



NOTES
1 MAIN PRIORITY NUCLEAR, RADIOLOGICAL AND CHEMICAL DETECTION, INCLUDING LLR AND TIC
2 FUNCTIONS AND RESPONSIBILITIES IAW ATP 45(B)
3 MOBILE, C-130 RAPID DEPLOYABLE.
4 MOBILE, ARMOURED NBC RECCE TEAMS.

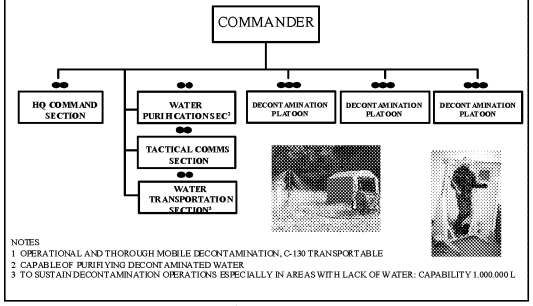
MULTINATIONAL CBRN DEFENCE BATTALION BIOLOGICAL DETECTION COMPANY[1]





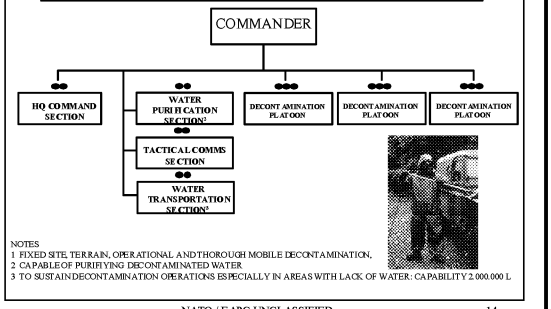
NOTES
1 MAIN PRIORITY BIOLOGICAL DETECTION
2 FUNCTIONS AND RESPONSIBILITIES IAW ATP 45(B)

MULTINATIONAL CBRN DEFENCE BATTALION
DECONTAMINATION COMPANY (LIGHT)[1]



NOTES
1 OPERATIONAL AND THOROUGH MOBILE DECONTAMINATION, C-130 TRANSPORTABLE
2 CAPABLE OF PURIFIYING DECONTAMINATED WATER
3 TO SUSTAIN DECONTAMINATION OPERATIONS ESPECIALLY IN AREAS WITH LACK OF WATER: CAPABILITY 1.000.000 L

MULTINATIONAL CBRN DEFENCE BATTALION
DECONTAMINATION COMPANY (HEAVY)[1]



NOTES
1 FIXED SITE, TERRAIN, OPERATIONAL AND THOROUGH MOBILE DECONTAMINATION,
2 CAPABLE OF PURIFIYING DECONTAMINATED WATER
3 TO SUSTAIN DECONTAMINATION OPERATIONS ESPECIALLY IN AREAS WITH LACK OF WATER: CAPABILITY 2.000.000 L

Force Generation Process

- Proposed timelines: CNRN Defence Battalion Initial Operation Capability (IOC) by December this year. Full Operational Capability (FOC) in July 2004.
- Lead Nation supplies core structure, in the first instance this is the Czech Republic
- Allies are expected to contribute the other specialist unit modules

Recommended Multinational CBRN Defence Battalion tasks I

To plan, prepare and conduct:

- Deployment operations on receipt of warning, activation, and movement orders.
- Command and control of all associated NBC Defence units.
- NBC reconnaissance operations, including warning and reporting.

Recommended Multinational CBRN Defence Battalion tasks II

To plan, prepare and conduct:

- Operational and full decontamination of personnel, materiel and fixed sites.
- To detect, monitor and operationally identify all listed CBRN EIH (TICs, LLR) and ROTA substances.
- CBRN assessments and advise to NATO commanders.
- Sustainment operations, including force protection of the battalion.

Questions?

Sampling and Detection

Colonel Henri GARRIGUE
WMDC

Why is BWA detection difficult ?

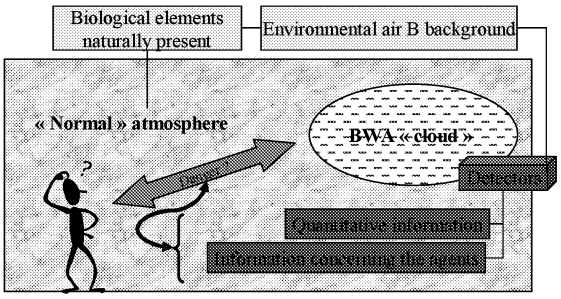
- Origin of biological danger is much more complex than in radioactivity or chemistry:
  - Biological agents
  - BWA replication capacity
  - Lethal/infectious doses may be extremely low
  - Environmental background may be high and variable

Sampling

- Types of samples
  - Air/liquids/solids
- Level of certainty
  - Environment
  - Medical samples
  - Legal proof

Level of certainty

- Environment
  - Early Warning
  - Control and validation
  - Identification
  - Monitoring
- Medical samples
- Legal proof



What has to be detected ?

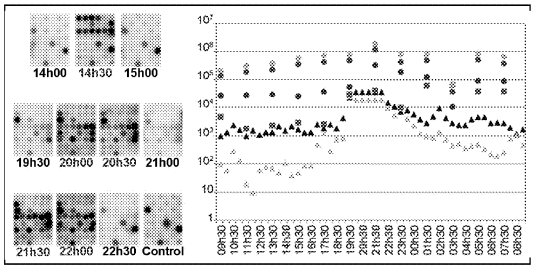
Bacteria	•Nucleic acids (ADN, ARN)
Rickettsies	•Proteins (including enzymes)
Viruses	•Vitality indices
	•Other bio-elements

Known or unknown ? | Natural or GM ? | Militarisation ?

Environmental air B. background

- Every litre of air inhaled contains hundreds of thousand of particles including biological elements (fungi, pollens, bacteria…)
- In few hours their quantity varies a lot
- Some micro-organisms are very close of BWA

Environmental B. background



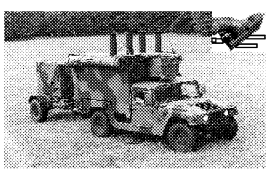
Several consequences

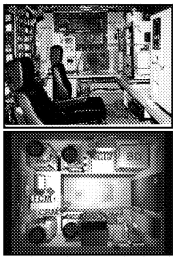
- detection requires the combination and connection of several methods in parallel, both direct and “indirect”
- generic methods and robust probes are needed
- exquisite sensitivity and specificity are required
- knowledge of biological ‘danger’ is needed

Panorama of biological detection technologies

	slow	Fast
Non selective	Not relevant	Physical methods WARNING METHODS FLAPS Flame photometry
Selective	Biological methods IDENTIFICATION METHODS Immunology Nucleic Acids Analysis	Mass spectrometry Identification Possible for toxins Technologies non available for viruses and bacteria

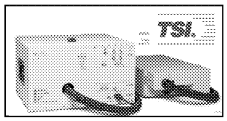
Several technologies are needed

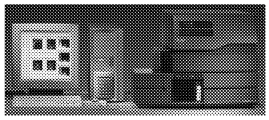




the Biological Integrated Detection System (BIDS)

Direct strategies for BWA detection





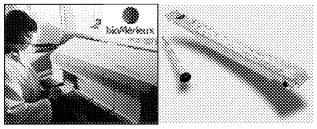
- particle analysers, in air or liquid flow (FLAPS, cytometry, MAB)
- mass spectrometry

Advantages and drawback

- Advantages:
  - rapid, and even real-time detection for some technologies
  - field-tested instruments are available in some cases,
  - no special reagents needed
- Drawbacks:
  - signature may sometimes be too poor to allow good discrimination from environmental background
  - signature is not very well correlated with 'danger'
- Consequence: a second level is needed to confirm or cancel the alert

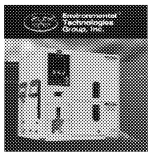
« Indirect » detection of BWA

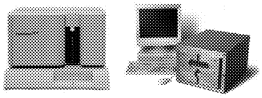
- use of probes specific for either:
  - 3D structures (« epitopes »): antibodies
  - 1D genetic information: DNA probes



hand-held tickets

some on-the-shelf equipments





Probes availability

- antibodies have been classified as critical reagents:
  - once available, it is feasible to find out natural variants or to engineer artificial variants that become undetectable by these probes
- as a consequence:
  - as opposed to instruments, these reagents are rarely shared
  - an independent production process must be set up

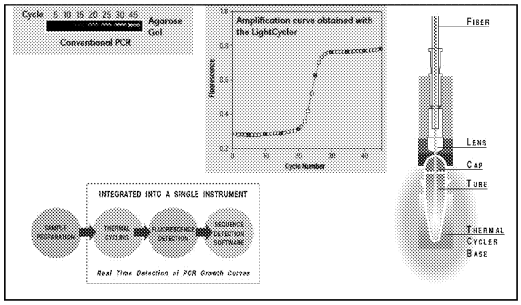
Advantages and drawbacks

- advantages:
  - devices for immunodetection of BWA with antibodies are on the shelf
  - continuous monitoring may be feasible
- drawbacks:
  - high quality probes are frequently difficult to obtain
  - antibody reactivity may not be fully correlated with 'danger'
  - sandwich assay may prove difficult to multiplex

Biological danger ?

- potential pathogenicity represents the danger
- pathogenicity is usually silent in airborne microorganisms (*e.g.* : *B. anthracis* spores)
- pathogenicity can only be searched within the microorganism genome (*i.e.* : not with antibodies)

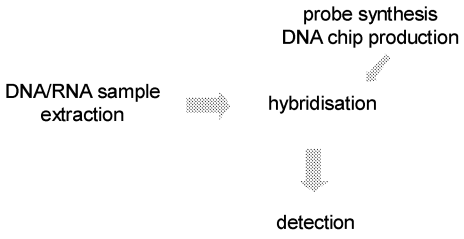
Use of PCR for BWA detection



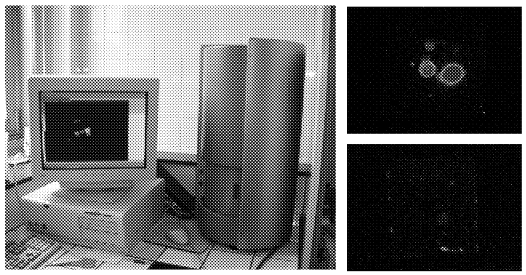
Advantages and drawbacks

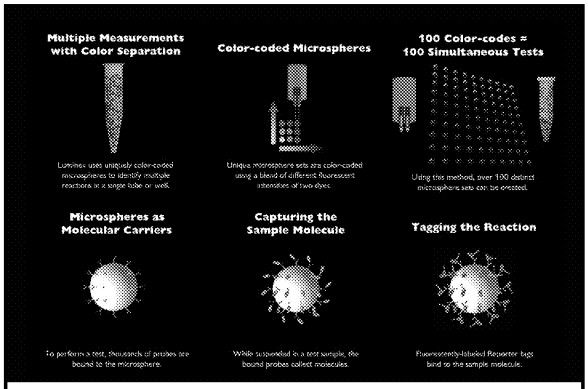
- advantages:
  - DNA probes are easy to design, produce and test
  - DNA can be amplified by PCR
  - DNA probes can target any gene, especially genes responsible for pathogenicity or resistance against antibiotics
  - DNA probe behavior is largely predictable
- drawbacks:
  - sample processing is more complex
  - strong signal amplification is required
  - PCR is sensitive to environmental contaminants
  - no multiplex amplification available yet

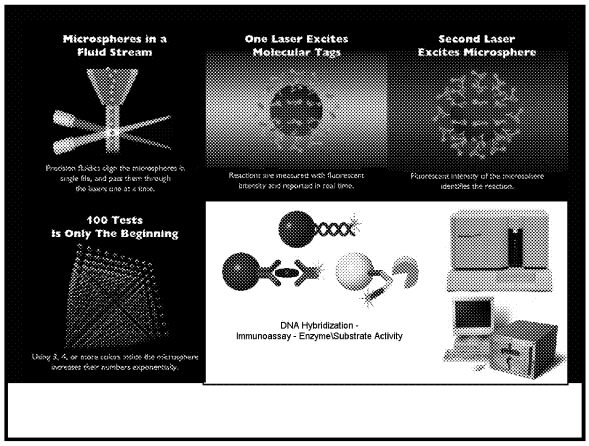
Detection of BWA with DNA chips



Chemiluminescence detection







Conclusion

Special thanks to Christophe Pannetier

DEFENCE R&D DÉFENSE

SWEDISH EAPC SEMINAR
NON-PROLIFERATION OFWMD
MEDICAL PROTECTION
SEPTEMBER 18, 2003

L.R. NAGATA & T.W. SAWYER DRDC SUFFIELD

Canada

Chemical Biological Defence Section

- Hazard Assessment Group
  - risk assessment, dispersion models
- Physical Protection Group
  - suits, respirators, decontamination
- Detection Identification Group
  - aerosol sampling, detection, Identification
- Medical Therapy Group
  - treatment of chemical agents, live agent training
- Preventive Medicine Group
  - medical protection against biological agents

CB Defence Program
Special Facilities/Expertise

- Canadian National Single Small-Scale Facility under CWC
  - synthesis and use of agents for permitted purposes
  - state-of-the-art chemical analytical facilities
- Biological Level 3 laboratories
  - bacteria and viruses
- Treatment and Medical Management of Chemical Casualties
  - multiple species models, live chemical agent training
- Counter-terrorism Training Centre (CTTC)
  - CB training of military and civilian first responders
  - CB forensic reference laboratory

Medical Therapy Group

Mandate

The provision of expert advice to the Canadian Forces and research into the mechanism of action and medical countermeasures against chemical weapon agents, including:

- Organophosphate nerve agents (OPs)
- Toxins (natural and genetically altered)
- Toxic industrial chemicals (TICs) and materials (TIMs)
- Vesicant agents (Lewisite (L) and sulphur mustard (HD)

…more recently, training of civilian and military first responders

Medical Therapy Group

Major Research Projects

VESICANTS

- Effect of sulphur mustard on apoptotic cell death
- Effect of sulphur mustard on intracellular calcium levels
- Characterization of sulphur mustard on gene expression
- (Protective) effect of cooling sulphur mustard and Lewisite exposed cells and skin
- Effect of (protective) arginine analogues on sulphur mustard toxicity

Nerve Agent Treatment

Current Therapy Pretreatment In NATO Countries

Pre-treatment

- Pyridostigmine

Therapy

- Atropine
- Oxime - toxogonin, P_2S, 2-PAM, HI-6
- Anticonvulsant - Avizafone, Diazepam

Back up Slides

Intermezzo:

NATO's earlier LLR Reconnaissance I

KFOR first aware of potential radiation hazard on 22 Dec 99 from worker at Fero-Nicklet plant

- **Found five objects**
- **Concern about looting**

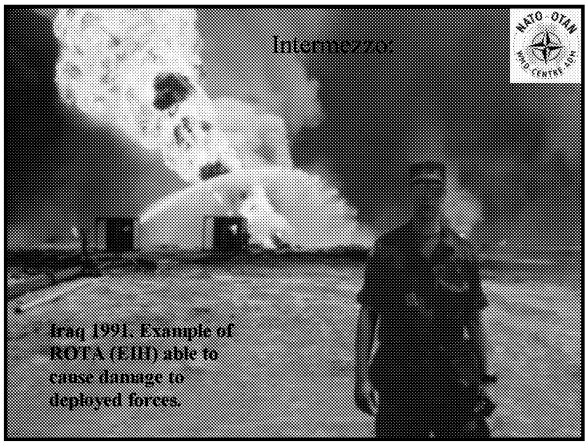
- **Radiation measurements first made on 17 Jan 00**

Intermezzo:

NATO's earlier LLR Reconnaissance II

- **CA forces brought to seriously damaged warehouse by a plant engineer**
- **Several badly corroded spheres**
- **Dose rate from Cs-137 ~580 mSv/h at two meters**
- **One sphere showed lead shield compromised**
- **Warehouse conditions indicative of bombing and fire**
- **International radiation warning labels burned off**

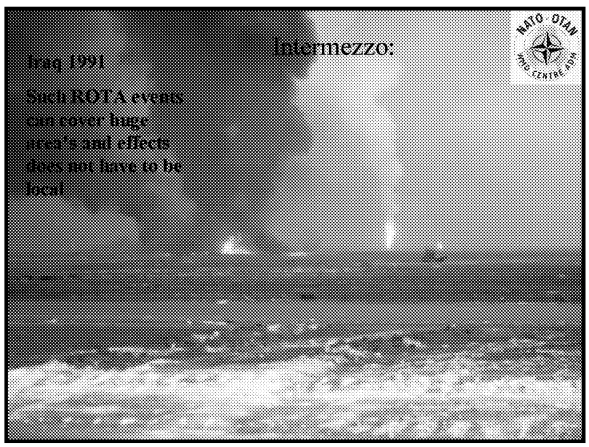
Intermezzo:



- **Iraq 1991. Example of ROTA (EIII) able to cause damage to deployed forces.**

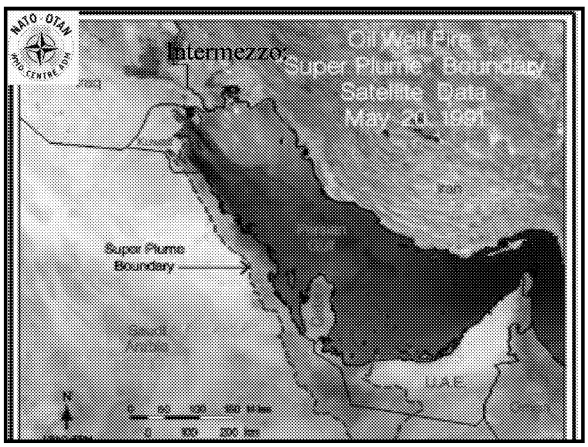
Intermezzo:

- **Iraq 1991**
- **Such ROTA events can cover huge area's and effects does not have to be local**



Intermezzo:

Oil Well Fire Super Plume Boundary Satellite Data May 20, 1991



Medical Therapy Group

Major Research Projects

ORGANOPHOSPHATE NERVE AGENTS

- Effect of different anesthetics on OP toxicity
- Pharmacokinetics of HI-6 (regulatory approval)
- Effect of exposure site (topical) on OP toxicity
- Efficacy of the Canadian Reactive Skin Decontaminant Lotion (RSDL) against topically applied OP toxicity
- Efficacy of bioscavenger therapy (next generation OP therapy)

Medical Therapy Group

Major Research Projects

ORGANOPHOSPHATE NERVE AGENTS...

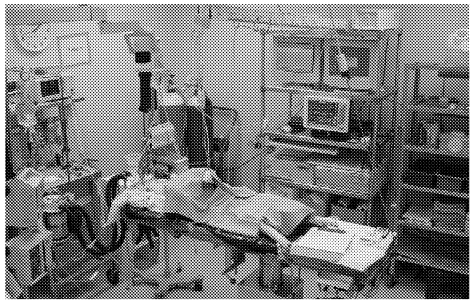
- *UK collaboration: VX skin absorption/decontamination efficacy*
- *FR collaboration: to be determined, starting September/2003*
- *US collaboration: decontaminant comparison of efficacy and safety (HD and VX)*
- *CB-MOU (CA, UK, US), TTCP (CA, UK, US, AUS)*
- *NATO (SIBCA – detection/ident, NL SWE CA)*

Medical Therapy Group

First Responder Training

A fully instrumented anesthetised domestic swine model has been developed that is currently used for the majority of our OP research and some of our sulphur mustard work.

The model system has also been used to train both civilian and military first responders to recognize, respond and treat casualties intoxicated with chemical weapon agents. Numerous groups from several countries have been trained at our facilities using this model system.



Medical Therapy Group

Experimental findings impacting casualty care/first responder training

- Choice of anesthetic impacts the severity of OP poisoning (some anesthetics appear to be protective, i.e. Propofol)
- Moderate cooling of Lewisite or sulphur mustard exposed skin may ameliorate resultant tissue injury
- Decontaminant studies (RSDL)
- Volatile anesthetics cause a strong positive signal in chemical agent monitors (CAM) in the "H" mode

Preventive Medicine Group

AIMS:

- Research and development of prophylaxis and therapies for the protection of Canadian Forces against biological warfare (BW) and endemic disease hazards.
- Provide biotechnological support and expertise to DRDC through the core Biotechnological Centre. Assess both the benefits and risks of these advances to the CF.
- Provide biocontainment support and BW expertise to DRDC.

Protection Against and Treatment of BW Infections

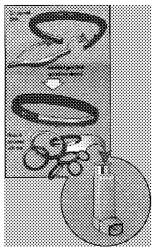
- Vaccines
- Immune modulators
- Human antibodies
- Antimicrobial nucleic acids
- New targets for antibiotics
- Drug delivery (aerosol, liposomes)

Vaccines

- Vaccines have allowed us to control infectious diseases such as smallpox, yellow fever and polio.
- Smallpox vaccine – cell culture derived
  - MVA – nonreplicating vaccinia
- Anthrax PA
- West Nile, Dengue – yellow fever recombinant (preclinical/clinic)
- Ebola/Marburg – adenovirus vectored vaccine (research)
- Vaccines to BW agents had a limited market for commercial development. When would vaccines be deployed?

Vaccines

- Brucella polysaccharide vaccine
- DNA vaccines:
  - western equine encephalitis virus (gene gun)
  - influenza A (aerosol delivered)
- Edible plant vaccine – Agriculture Canada (Lethbridge)
- Adjuvants
  - immune modulators, CpG
- Analysis of the immune response
  - humoral, cytokine, cellular response



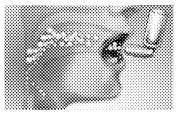
Treatment of BW Agents

- New antibiotics/anti-virals. Smallpox – cidofovir and oral derivatives promising (J. Huggins – USAMRIID)
- Human antibodies for passive protection – human hyperimmune sera, xenogenic mice, phage display, SLAM, transgenic goats, cattle.
- Immune modulators (cytokines, CpG)
- Biotechnological advances – antisense, si-RNA, DNAzymes, receptor analogues,

Human Antibodies

- Human antibodies can provide immediate post-exposure protection and potential treatment of infectious diseases
- Recombinant human antibodies to WEE and anthrax funded under CBR Research & Technology Initiative (Health Canada)
- Vaccinia immune globulin – human hyperimmune (Cangene)
- Human antibodies for ricin treatment – Cangene (CRTI)
- Genetic engineer recombinant antibodies for diagnostics

Antimicrobials

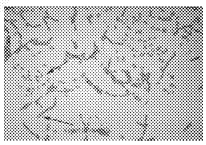


- Ciprofloxacin, encapsulated
  - Aerosol delivery
- Search for new target for antibiotics (anthrax, TB, malaria)
- Antisense oligonucleotides and DNAzymes
  - Johnson & Johnson
- Nubiotics (small oligonucleotides)
  - Oligo

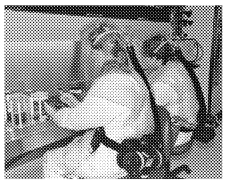
Poly ICLC

- Immune modulator which induces interferon.
- Antiviral activity.
- Liposomal encapsulation reduces the toxicity of poly ICLC.
- Protection demonstrated for influenza A, WEE, VEE, ebola (animal models).
- Negotiations are in progress for Liposomal poly ICLC licensing.

Anthrax



BL-3 Bacteriology Suite



DEFENCE R&D DÉFENSE

PHYSICAL PROTECTION

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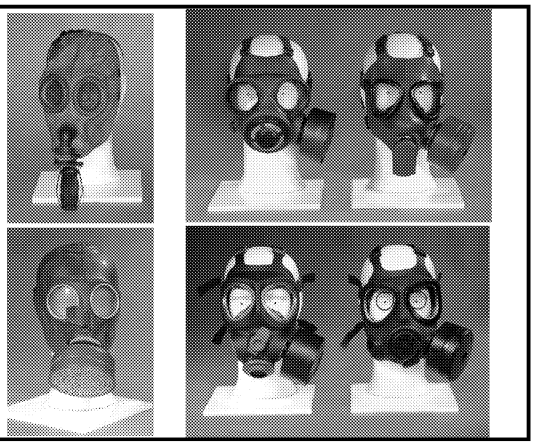
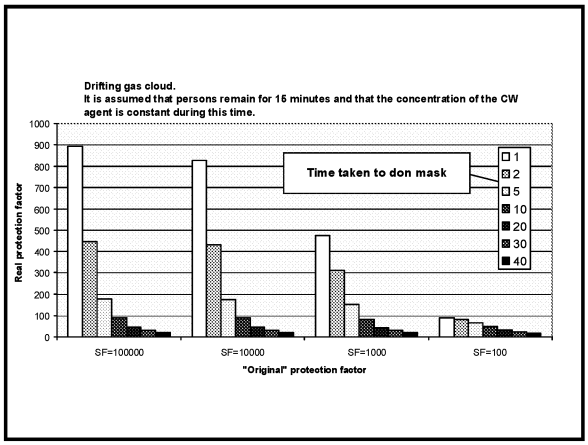
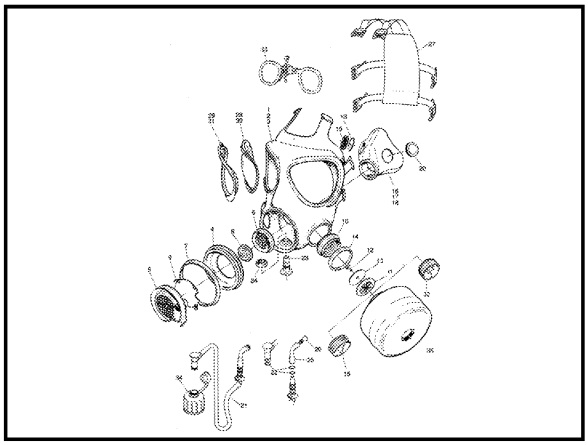
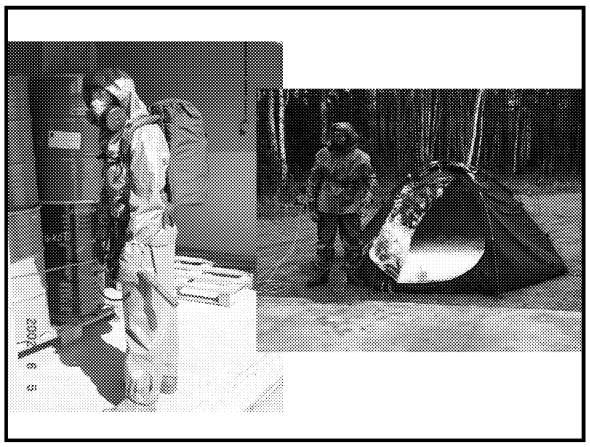
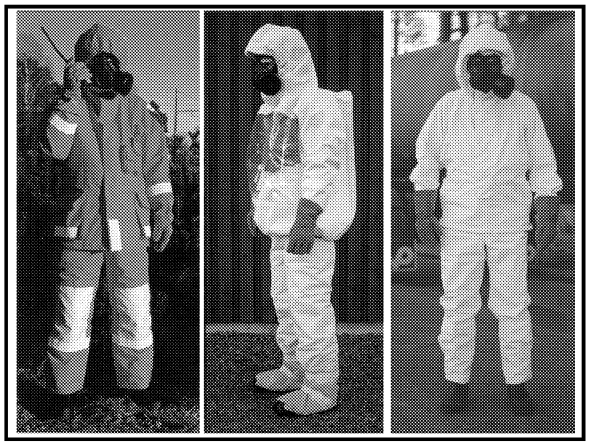
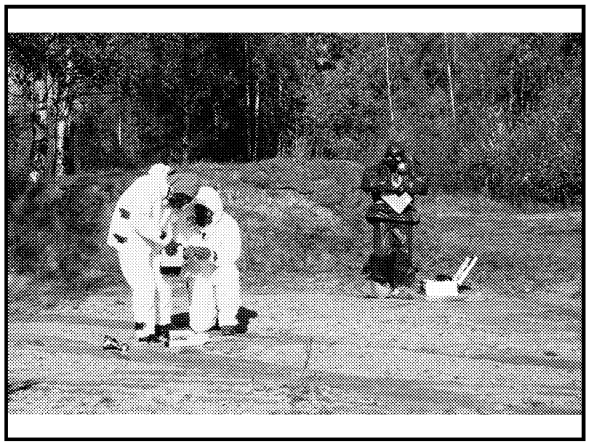


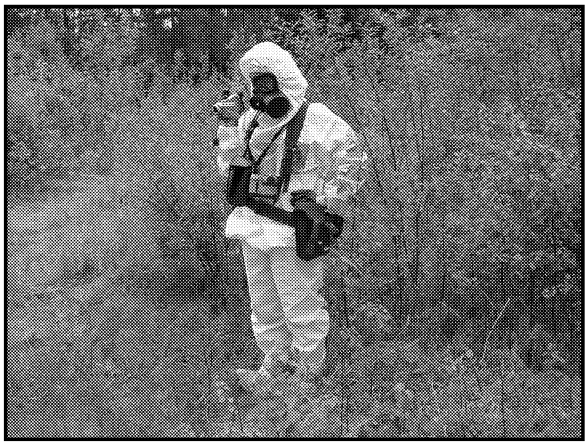


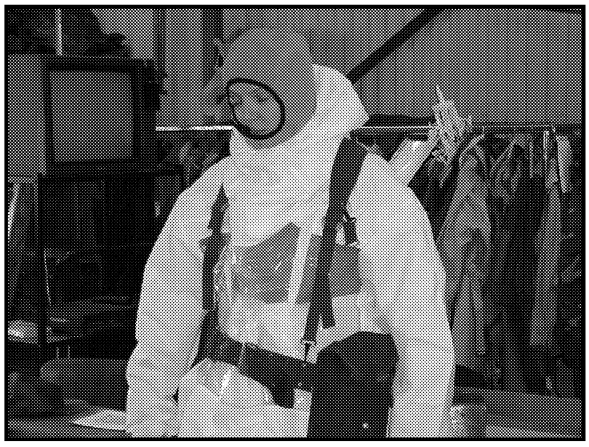




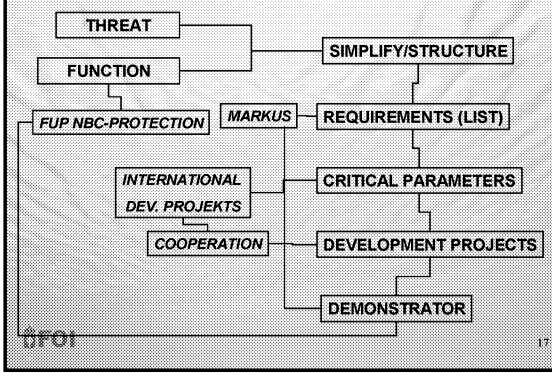








NBC-protection for the soldier of the future



FOI

17

NBC-protection for the soldier of the future

DF MISSION

TO DO ANYTHING - ANYWHERE

NBC-SCENARIOS WITH WIDER SCALES

From peace to crisis and war

From few and known agents to a broader spectrum (complexity)

From a "classical" slow course of events to surprise and speed (time)

FOI

18

NBC-protection for the soldier of the future

IMPORTANT FACTORS

- More agents + B
- Lower permissible limits + zero tolerance
- Integrated + modular + flexible + improveable

CONSEQUENCES

- Protection to be worn at all times (time + protectionfactor)
- Individual dosemeters (N,C,,,B), "healthmeters"
- Higher protection factors, on individual level (?)
- Better knowledge of limitations -> realistic tests
- Internationally coordinated specifications of requirements
- Internationally coordinated test metods
- Lower physiological burden
- Local (swedish) requirements (wonter) integrated internationally

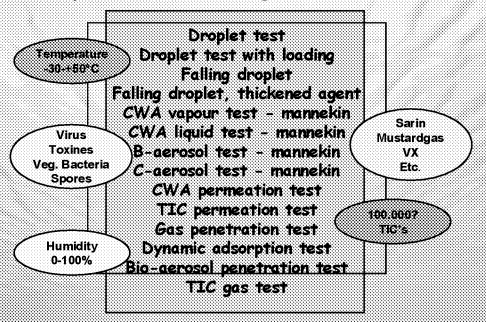
FOI 19

Requirement:
The suit must protect against all types of BWA, CWA and TIC's in all environments during the whole duration of the mission without negaitve influences on the performance of the soldier!

Testing done:
Dropplet test, with or without loading, using mustard, on three pieces of material, ø 5 cm, at +30°C och the humidity of the used laboratory.

FOI 20

Examples of BC testing of materials/suits



FOI 21

NBC-protection for the soldier of the future

MOST IMPORTANT

- N + B + C
- Test metods och tests
- Higher protection factors
- Lower physiological burden
- Better fit
- Integration
- Internationalisation

FOI 22

NBC-protection for the soldier of the future

A BALANCED PROTECTION

BUT WHAT BALANCE?

Interoperability – swedish requirements

High protection factor – low physiological burden

Swedish need of competenses – international "market"

FOI 23

CEPA ["Technology Arrangement for Laboratories for Defence European Science" (Thales)]

Novel Materials and Concepts for Low Burden NBC Protective Clothing Systems

UK, Belgium, Finland, France, Greece, Italy, Holland, Norway, Spain, Sweden, Turkey

Goal:

To enhance the capability of the Individual Protective Equipment

Faktorer:

- Changed threat
- Physiological and psycological burden
- Change in mission
- Quantification of risk
- TICs + TIMs
- large span in climate

FOI 24

NBC-PROTECTION AS A STRATEGICAL ASSET

IMPORTANT COMPETENCES

- tactical assessment
- risk assessment — DECISION SUPPORT
- requirement analysis

- TRAINING
- procedures for reporting and information dissemination

PREPAREDNESS AND PROTECTION

- **RISK ASSESSMENT**
- **CONTINGENCY PLANNING**
- **SPECIFIC MEASURES**